County of San Diego

Stormwater Quality Management Plan (SWQMP)

For Priority Development Projects (PDPs)

Use for all PDPs (see Storm Water Intake Form, Part 4)

Priority Development Project

Project Information	
Project Name	GS Valley Expansion
Project Address	28435 Lizard Rocks Rd, Valley Center, CA 92082
Assessor's Parcel # (APN)	188-250-15-00 and 188-250-41-00
Permit # / Record ID	PDS2020-STP-03-026W1

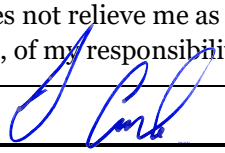
Project Applicant / Project Proponent		
Name	Neil Kadakia	
Address	910 South El Camino Real, Suite 100, San Clemente, CA 92672	
Phone	(949) 546-0563	**Email:** neil@greensglobal.com

SWQMP Preparer		
Name	Gregory Cooke	
Company (if applicable)	DRC Engineering Inc.	
Address	160 South Old Springs Rd, Suite 210, Anaheim, CA 92808	
Phone	714-685-6860 ext. 331	**Email:** gcooke@drc-eng.com
PE Number (if applicable)	39478	

Preparer's Certification

I understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the County of San Diego BMP Design Manual. The BMP Design Manual is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100) requirements for storm water management.

This SWQMP is intended to comply with applicable requirements of the BMP Design Manual. I certify that it has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this SWQMP by County staff is confined to a review and does not relieve me as the person in charge of overseeing the selection and design of storm water BMPs for this project, of my responsibilities for project design.

Signature  **Date** May 27, 2021

COUNTY ACCEPTED

SWQMP Approved By: *Approval Date*:

**** Note* Approval does not constitute compliance with regulatory requirements.***

Submittal Record: List the dates of SWQMP and plan submittals and updates. Briefly describe key changes from previous versions. If responding to plan check comments, note this in the entry and attach the responses as applicable.

No.	Date	Summary of Changes
Preliminary Design / Planning / CEQA		
1	1/24/2020	Initial Submittal
2	6/9/2020	Address plan check comments
3	1/26/2021	Address plan check comments
4	5/27/2021	Address plan check comments
No.	Date	Summary of Change
Final Design		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
4	Date	Summary of Change
No.	Date	Summary of Change
Plan Changes		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
4	Date	Summary of Change
No.	Date	Summary of Change

PDP SWQMP Submittal Checklist

SWQMP Tables: All of the eight tables below must be completed.

SWQMP Attachments[1]: Use the checklist below to identify which attachments will be included with this submittal. Attachments with boxes already checked (☒) are required for all projects. The applicability of other attachments will be determined upon completing this form.

☒ Attachment 1: Storm Water Intake Form

☒ Attachment 2: DMA Exhibits and Construction Plan Sheets

☒ Attachment 3: Source Control BMP Worksheet

☒ Attachment 4: Previous SWQMP Submittals

☒ Attachment 5: Existing Site and Drainage Description

☒ Attachment 6: Documentation of DMAs without Structural BMPs

☒ Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs

☒ Attachment 8: Documentation of DMAs with Structural Hydromodification Management BMPs

☒ Attachment 9: Management of Critical Coarse Sediment Yield Areas

☒ Attachment 10: Installation Verification Form

☒ Attachment 11: BMP Maintenance Agreements and Plans

☐ Attachment 12: Documentation of Alternative Compliance Projects (ACPs)

After completing the remainder of this form, check the applicable SWQMP Attachment boxes to summarize your selections.

[1] All SWQMP attachments are available at www.sandiego.gov/stormwater under the Development Resources tab. Some attachments are presented out of order because they are shared between multiple SWQMP forms.

Table 1 – Scope of SWQMP Submittal

Select one option below that describes the scope of this SWQMP Submittal. Document your selection as indicated.	
SWQMP Scope	**Required Documentation**
☒ ***a. SWQMP addresses the entire project***	No additional documentation.
☐ ***b. SWQMP implements requirements of an earlier master SWQMP submittal***	Include a copy of the previous submittal as **Attachment 4**.
☐ ***c. First of multiple SWQMP submittals***	Use the spaces below to identify the elements addressed in this submittal and in future submittals.
(1) Elements addressed in current submittal (streets, common areas, first project phase, etc.):	
(2) Elements to be addressed in future submittal(s) (individual lots, future project phases, etc.):	

Table 2 – Baseline BMPs for Existing and Proposed Site Features

Site Features Select each feature that applies.	BMP Implementation Describe BMP implementation for each selected site feature.

Group 1: Existing Natural Site Features [See BMPDM Sections 4.3.1 and 4.3.2]

		Maintain & conserve natural features		Establish buffers for waterbodies	
		Full	Partial	Full	Partial
☐	**Natural waterbodies**	☐	☐	☐	☐
☐	**Natural storage reservoirs & drainage corridors**	☐	☐		
☒	**Natural areas, soils, & vegetation (incl. trees)**	☐	☒		

Group 2: Common Impervious Outdoor Site Features [See BMPDM Sections 4.3.3 and 4.3.5]

		Disperse impervious areas (See SD-B)		Use permeable materials (See SD-D)		Minimize impervious areas
		Full	Partial	Full	Partial	
☒	**Streets and roads**	☐	☒	☐	☐	☒ Check here to confirm that impervious surfaces have been minimized where applicable and feasible for all outdoor impervious areas. If not, explain in Table 4.
☒	**Sidewalks & walkways**	☐	☒	☐	☐	
☒	**Parking areas & lots**	☐	☐	☐	☐	
☒	**Driveways**	☐	☒	☐	☐	
☐	**Patios, decks, & courtyards**	☐	☐	☐	☐	
☐	**Hardcourt recreation areas**	☐	☐	☐	☐	
☐	Add impervious feature	☐	☐	☐	☐	
☐	Add impervious feature	☐	☐	☐	☐	
☐	Add impervious feature	☐	☐	☐	☐	

Group 3: Other Outdoor Site Features [See BMPDM Sections 4.2.6, 4.3.4, 4.3.5, 4.3.7, and 4.3.8]

		Disperse rooftop runoff (See SD-B)		Install green roofs (optional; See SD-C)		Use rain barrels to capture runoff (optional; See SD-E)	
☒	**Rooftop areas**	Full	Partial	Full	Partial	Full	Partial
		☐	☒	☐	☐	☐	☐

		Use water-efficient landscaping (required)	Install efficient irrigation systems (required)	Minimize erosion of slopes and surfaces (required)
☒	**Landscaped areas**	Full	Full	Full
		☒	☒	☒

		Provide a designated washing area		Drain feature to the sanitary sewer (if allowed)		Drain feature to a pervious area	
☐	**Water features (pools, spas, etc.)**	Full	Partial	Full	Partial	Full	Partial
		☐	☐	☐	☐	☐	☐

Note: Justification is required in Table 4 for any feature not selecting at least one BMP (either full or partial implementation). For Group 2 features this means not selecting either SD-B or SD-D. Additional justifications may be required on request by County staff. Also use Table 4 to describe sources or BMPs other than those listed.

Table 3 –Baseline BMPs for Pollutant-generating Sources (Group 4)

A. Requirements for Documentation Select either or both as applicable.	Completion of Part B is not required because: ☐ This is a Small Residential Project, OR ☐ None of these sources or features is proposed.	☐ ***Source Control BMP Requirements Worksheet E.1-1*** (SC in Appendix E of the BMP Design Manual) is included as **Attachment 3** (optional unless requested by County staff).

B. Sources and BMPs Select all proposed sources and features below. Then select the BMPs on the right to be implemented for each.	**Plumb to sanitary sewer**	**Drain feature to a pervious area**	**Provide containment for spills and discharges**	**Prevent contact with rainfall**	**Isolate flows from adjacent areas**	**Prevent wind dispersal**	**Label with stencils or signs**
Common Source Areas							
☒ **Trash & Refuse Storage**	☐	---	☐	☒	☒	☒	---
☐ **Materials & Equipment Storage**	☐	---	☐	☐	☐	☐	---
☒ **Loading & Unloading**	☐	---	☐	☒	☐	---	---
☐ **Fueling**	☐	---	☐	☐	☐	---	---
☐ **Maintenance & Repair**	☐	---	☐	☐	☐	---	---
☐ **Vehicle & Equipment Cleaning**	☐	---	☐	☐	☐	---	---
☐ **Food Preparation or Service**	☐	---	☐	☐	☐	---	---
Distributed Features							
☒ **Storm drain inlets & catch basins**	---	---	---	---	---	---	☒
☐ **Interior floor drains and sumps**	☐	---	---	---	---	---	---
☐ **Drain lines (air conditioning, etc.)**	☐	☐	☐	---	---	---	---
☐ **Fire test sprinkler discharges**	☐	☐	☐	---	---	---	---

Provide the following in Table 4: (1) justification of any source area or feature with NO BMPs selected, (2) justification of individual unselected BMPs *if requested by County staff*, and (3) identification of any proposed pollutant-generating sources and BMPs not listed here.

Note: Pollutant-generating sources and features may not discharge directly to the MS4. Discharging to any of the stormwater BMPs identified in Table 5 Part B is also discouraged. If doing so, however, the source or feature area must be included in applicable DCV calculations.

Table 4 – Explanations and Justifications for Table 2 and 3 Baseline BMPs

☐ **Check here if no explanations or justifications for Table 2 or 3 BMPs are required.**

- **Required Justifications**: If NO BMPs are selected for a source or feature, justify why all BMPs are either not applicable or are infeasible. For Group 2 features NO BMPs means not selecting either SD-B or SD-D.
- **If Requested**: Justify why individual BMPs will not be implemented or will only be partially implemented.
- **Additional Explanation**: Describe any proposed features and/or BMPs not listed in Tables 2 or 3.

BMP-Feature Combination		**Explanation**
Feature	Parking areas and lots	There is only a row of parking stalls at the front entrance of the office but majority of the pervious areas are along the northerly, easterly, and westerly of the property. Dispersing impervious areas is not suitable for this project site.
BMP	Disperse impervious areas	
Feature	Parking areas and lots	There is only a row of parking stalls at the front entrance of the office. The ratio of the total drainage area to the permeable pavement will exceed the 1.5:1 threshold indicated under SD-D.
BMP	Use permeable materials	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	

Table 5: DMA Structural Compliance Strategies and Documentation

Part A – Selection and Application Structural Performance Standards

1. Selection of Standards (select one; see BMPDM Section 6.1)

☒ a. Pollutant control + hydromodification ☐ b. Pollutant control only (project is exempt from hydromodification requirements)

2. Application of Structural Performance Standards (select one; see BMPDM Section 1.7)

☐ **New Development Projects:** Standards apply to all impervious surfaces.

☒ **Redevelopment Projects:** Complete the calculations below. Select the applicable scenario based on the results.

a. Existing impervious area (ft²)	b. Impervious area created / replaced (ft²)	c. % Impervious created / replaced [(b/a)*100]
179,281	82,526	56%

☒ *Scenario 1: c is 50% or more*: Performance standards apply to all impervious surfaces (a + b).

☐ *Scenario 2: c is less than 50%*: Performance standards apply only to created or replaced impervious surfaces (b only).

Part B – Compliance Strategies and Required Attachments

1.*Complete and submit each of the applicable attachments on the right.*

Att. 1	Att. 2	Att. 3	Att. 4	Att. 5
Storm Water Intake Form ☒	DMA Exhibits and Construction Plan Sheets ☒	Source Control BMP Worksheet (see Table 3) ☒	Previous SWQMP Submittals (see Table 1) ☐	Existing Site and Drainage Description ☒

2. *Indicate each compliance strategy below that will be used for one or more DMAs on the site.*

	Att. 6 DMAs without Structural BMPs	Att. 7 DMAs w/ Structural Pollutant Control BMPs	Att. 8 DMAs w/ Structural Hydromod. BMPs	Att. 9 Critical Coarse Sediment Yield Areas	Att. 10 Installation Verification Form	Att. 11 Maintenance Agreements/ Plans	Att. 12 Alternative Compliance Projects
☒Self-mitigating DMAs (BMPDM Section 5.2.1)	☒			☒			
☐De Minimis DMAs (BMPDM Section 5.2.2)	☐			☐			
☐Self-retaining DMAs (BMPDM Section 5.2.3)	☐			☐	☐		
Structural BMPs (select all that apply)							
☒Pollutant Control BMPs (BMPDM Section 5.4)		☒		☒	☒	☒	
☒Hydromodification BMPs (BMPDM Chapter 6)			☒	☒	☒	☒	
☐Alternative Compliance Project (BMPDM Section 1.8)				☐	☐	☐	☐

☒ **Please check this box after you complete this list. Corresponding attachments will be automatically selected on the right.**

- *Attachments 1, 2, and 5 are required for all projects.*

Table 6: Critical Coarse Sediment Yield Area (CCSYA) Requirements

- Identify one applicable compliance pathway for the PDP below.
- Document your selection in **Attachment 9**.

A. Hydromodification Management Exemption (BMPDM Sections 1.6 and 6.1)

☐ **PDP is Exempt from Hydromodification Management Requirements**

Select if hydromodification management exemption was selected in Table 4 Part A.1.

B. Watershed Management Area (WMAA) Mapping (BMPDM Appendix H.1.1.2)

☒ **WMAA mapping demonstrates the following:**

a. <5% of potential onsite CCYSAs will be impacted (built on or obstructed)

b. All potential upstream offsite CCYSAs will be bypassed

C. Resource Protection Ordinance (RPO) Methods (BMPDM Appendix H.1.1.1)

☐ **RPO Scenario 1: PDP is subject to and in compliance with RPO requirements**

a. Project requires one or more discretionary permits (RPO applicability is confirmed during discretionary review)

b. Onsite AND upstream offsite CCSYAs will be avoided and/or bypassed

☐ **RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements**[2]

a. Project does not require discretionary permits

b. Project will bypass all upstream offsite CCSYAs (no requirements for onsite CCSYAs)

D. No Net Impact Analysis (BMPDM Appendix H.4)

☐ **Project demonstrates no net impact to receiving waters**

[2] Does not include PDPs utilizing exemption(s) via RPO Section 86.604(e)(2)(cc) or 86.604(e)(3).

Table 7 –Minimum Construction Stormwater BMPs

Minimum Required BMPs by Activity Type Select all applicable activities and at least one BMP for each	References Caltrans[3]	 County of San Diego	
☒ **Erosion Control for Disturbed Slopes** (choose at least 1 per season)			
☒ Vegetation Stabilization Planting[4] (Summer)	SS-2, SS-4		
☐ Hydraulic Stabilization Hydroseeding[9] (Summer)	SS-4		
☒ Bonded Fiber Matrix or Stabilized Fiber Matrix[5] (Winter)	SS-3		
☒ Physical Stabilization Erosion Control Blanket[7] (Winter)	SS-7		
☒ **Erosion control for disturbed flat areas (slope < 5%)**			
☐ County Standard Lot Perimeter Protection Detail	SC-2	PDS 659[6]	
☒ Use of Item A erosion control measures on flat areas	SS-3, SS-4, SS-7		
☐ County Standard Desilting Basin (must treat all site runoff)	SC-2	PDS 660[7]	
☐ Mulch, straw, wood chips, soil application	SS-6, SS-8		
☒ **Energy dissipation (required to control velocity for concentrated runoff or dewatering discharge)**			
☒ Energy Dissipater Outlet Protection	SS-10	RSD D-40[8]	
☒ **Sediment control for all disturbed areas**			
☐ Silt Fence	SC-1		
☒ Fiber Rolls (Straw Wattles)	SC-5		
☒ Gravel & Sand Bags	SC-6, SC-8		
☐ Dewatering Filtration	NS-2		
☒ Storm Drain Inlet Protection	SC-10		
☐ Engineered Desilting Basin (sized for 10-year flow)	SC-2		
☒ **Preventing offsite tracking of sediment**			
☒ Stabilized Construction Entrance	TC-1		
☐ Construction Road Stabilization	TC-2		
☐ Entrance/Exit Tire Wash	TC-3		
☐ Entrance/Exit Inspection & Cleaning Facility	TC-1		
☒ Street Sweeping and Vacuuming	SC-7		
☒ **Materials Management**			
☒ Material Delivery & Storage	WM-1		
☒ Spill Prevention and Control	WM-4		
☒ **Waste Management[9]**			
☒ Waste Management Concrete Waste Management	WM-8		
☒ Solid Waste Management	WM-5		
☒ Sanitary Waste Management	WM-9		
☒ Hazardous Waste Management	WM-6		

[3] See Caltrans 2017 Storm Water Quality Handbooks, Construction Site BMP Manual, available at: (http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm)
[4] Planting or Hydroseeding may be installed between May 1st and August 15th. Slope irrigation must be in place and operable for slopes >3 feet. Vegetation must be watered and established prior to October 1st. A contingency physical BMP must be implemented by August 15th if vegetation is not established by that date. If landscaping is proposed, erosion control measures must also be used while landscaping is being established. Established vegetation must have a subsurface mat of intertwined mature roots with a uniform vegetative coverage of 70 percent of the natural vegetative coverage or more on all disturbed areas.
[5] All slopes over three feet must have established vegetative cover prior to final permit approval.
[6] County PDS 659. Standard Lot Perimeter Protection Design System (Bldg. Division)
[7] County PDS 660. County Standard Desilting Basin for Disturbed Areas of 1 Acre or Less Bldg. Division
[8] Regional Standard Drawing D-40 – Rip Rap Energy Dissipater (also acceptable for velocity reduction)
[9] Applicants are responsible to apply appropriate BMPs for specific wastes (e.g., BMP WM-8 for concrete).

Table 8 – Explanations and Justifications for Construction Phase BMPs

☒ **Check here if no explanations or justifications for Table 7 BMPs are required.**		
Justifications for Table 7 Temporary Construction Phase BMPs • **Required Justifications**: Justify all construction activity types for which NO BMPs were selected. • **If Requested**: Justify why specific individual BMPs were not selected. • **Additional Explanation**: Describe any proposed features and/or BMPs not listed in Table 7.		
Activity Type / BMP		**Explanation**
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	

County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 1: Storm Water Intake Form for All Permit Applications

This form establishes Stormwater Quality Management Plan (SWQMP) requirements for Development Projects per Sections 67.809 and 67.811 of the County of San Diego Watershed Protection Ordinance (WPO). See ***Storm Water Intake Form Instructions*** for additional guidance and explanation of terms.

Part 1. Project Information	
Project Name:	GS Valley Expansion
Record ID (Permit) No(s):	PDS2020-STP-03-026W1
Assessor's Parcel No(s):	188-250-41; 188-250-15
Street Address (or Intersection):	28435 Lizard Rocks Road
City, State, Zip:	Valley Center, CA 92082

Part 2. Applicant / Project Proponent Information	
Name:	Neil Kadakia
Company:	Greens Valley Center, LLC
Street Address:	910 South El Camino Real, Suite 100
City, State, Zip:	San Clemente, CA 92672
Phone Number	(949) 546-0563
Email:	neil@greensglobal.com

Part 3. Required Information for All Development Projects

Ⓐ	**1. Existing (pre-development) impervious surfaces (ft²)**	**2. Created or replaced impervious surfaces (ft²)**	**3. Total disturbed area (acres or ft²)**
	15,787	82,526	94,110

Ⓑ	☒ Check here and provide a WDID# if this project is subject to the California Construction General Permit (Order No. 2009-0009-DWQ)[1]	**WDID # (if issued)**

For County Use Only	Reviewed By:	Review Date:
☐ Standard SWQMP	☐ PDP SWQMP	☐ Green Streets PDP Exemption SWQMP

[1] Available at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html

Part 4. Priority Classification & SWQMP Form Selection

(A) *If your project is the following ... (select one)*	(B) *You must complete ...*
☐ **Standard Project** ☐ a. Project is East of the Pacific/Salton Sea Divide ☐ b. None of the PDP criteria below applies	→ **Standard *SWQMP Form***
☒ **Priority Development Project (PDP)** ☐ 1. Project is part of an existing PDP, OR ☒ 2. Project does any of the following: ☒ a. Creates or replaces a total of 10,000 ft² or more of impervious surface ☒ b. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) parking lots; (2) streets, roads, highways, freeways, and/or driveways; (3) restaurants; and (4) hillsides ☐ c. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) automotive repair shops; and (2) retail gasoline outlets ☐ d. Discharges directly to an Environmentally Sensitive Area (ESA) AND creates or replaces 2,500 ft² or more of impervious surface ☒ e. Disturbs one or more acres of land (43,560 ft²) and is expected to generate pollutants post-construction ☒ f. Is a redevelopment project that creates or replaces 5,000 ft² or more of impervious surface on a site already having at least 10,000 ft² of impervious surface	→ **PDP *SWQMP Form***
☐ **Green Streets PDP Exemption[2]**	→ **Green *Streets PDP Exemption SWQMP Form***

Part 5. Applicant Signature

I have reviewed the information in this form, and it is true and correct to the best of my knowledge.

Applicant / Project Proponent Signature: [signature] Date: 05/27/2021

- ***Upon completion*** *submit this form to the County.*
- ***If requested****, attach supporting documentation to justify selections made or exemptions claimed.*
- ***If this is a PDP that is part of a larger existing PDP****, you will be required to attach a copy of the existing SWQMP to the newer SWQMP submittal.*

[2] ***Green Streets PDP Exemption Projects*** are those claiming exemption from PDP classification per WPO Section 67.811(b)(2) because they consist exclusively of *either* 1) development of new sidewalks, bike lanes, and/or trails; *or* 2) improvements to existing roads, sidewalks, bike lanes, and/or trails.

2.0 General Requirements

- Attachment 2 consolidates exhibits and plans required for the entire project.
- Complete the table below to indicate which sub-attachments are included with the submittal. Sub-attachments that are not applicable can be excluded from the submittal.
- Unless otherwise stated, features and BMPs identified and described in each corresponding Attachment (6 through 9) must be shown on applicable DMA Exhibits and construction plans submitted for the project.

Sub-attachments	Requirement
☒ **2.1: DMA Exhibits**	All PDPs
☒ **2.2: Individual Structural BMP DMA Mapbook**	PDPs with structural BMPs
☒ **2.3: Construction Plan Sets**	All projects

2.1 DMA Exhibits

- DMA Exhibits must show all DMAs on the project site. Exhibits must include all applicable features identified in applicable SWQMP attachments.
- Exhibits may be prepared individually for the BMPs associated with each applicable SWQMP Attachment (6, 7, 8, and/or 9) or combined into one or more consolidated exhibits.
- Use this checklist to ensure required information is included on each exhibit (copy as needed).

DMA Exhibit ID #:	**DMA Exhibit - Existing**	
A. Features required for all exhibits		
1. Existing Site Features		
☒ Underlying hydrologic soil group (A, B, C, D)	☒ Topography and impervious areas	
☒ Approximate depth to groundwater	☒ Existing drainage network, directions, and offsite connections	
☐ Natural hydrologic features		
2. Drainage Management Area (DMA) Information		
☐ Proposed drainage network, directions, and offsite connections	☒ DMA boundaries, ID numbers, areas, and type (structural BMP, de minimis, etc.)	
3. Proposed Site Changes, Features, and BMPs		
☐ Proposed demolition and grading	☐ Construction BMPs[2]	
☐ Group 1, 2, and 3 Features[1]	☐ Baseline source control BMPs	
☐ Group 4 Features	☐ Baseline source control BMPs	
B. Proposed Features and BMPs Specific to Individual SWQMP Attachments[3]		
☐ Attachment 6	☐ SSD-BMP impervious dispersion areas ☐ SSD-BMP tree wells	
☐ Attachment 7	☐ Structural pollutant control BMPs	
☐ Attachment 8	☐ Structural hydromodification management BMPs ☐ Point(s) of Compliance (POC) for hydromodification management ☐ Proposed drainage boundary and drainage area to each POC	
☐ Attachment 9	☐ Onsite CCSYAs	☐ Bypass of onsite CCSYAs ☐ Bypass of upstream offsite CCSYAs

[1] Group 1-4 features and baseline BMPs from PDP SWQMP Tables 2 and 3.
[2] Minimum Construction Stormwater BMPs from PDP SWQMP Table 7.
[3] Identify the location, ID numbers, type, and size/detail of BMPs.

DMA Exhibit ID #:	DMA Exhibit - Proposed

A. Features required for all exhibits

1. Existing Site Features

- ☒ Underlying hydrologic soil group (A, B, C, D)
- ☒ Approximate depth to groundwater
- ☐ Natural hydrologic features
- ☒ Topography and impervious areas
- ☒ Existing drainage network, directions, and offsite connections

2. Drainage Management Area (DMA) Information

- ☒ Proposed drainage network, directions, and offsite connections
- ☒ DMA boundaries, ID numbers, areas, and type (structural BMP, de minimis, etc.)

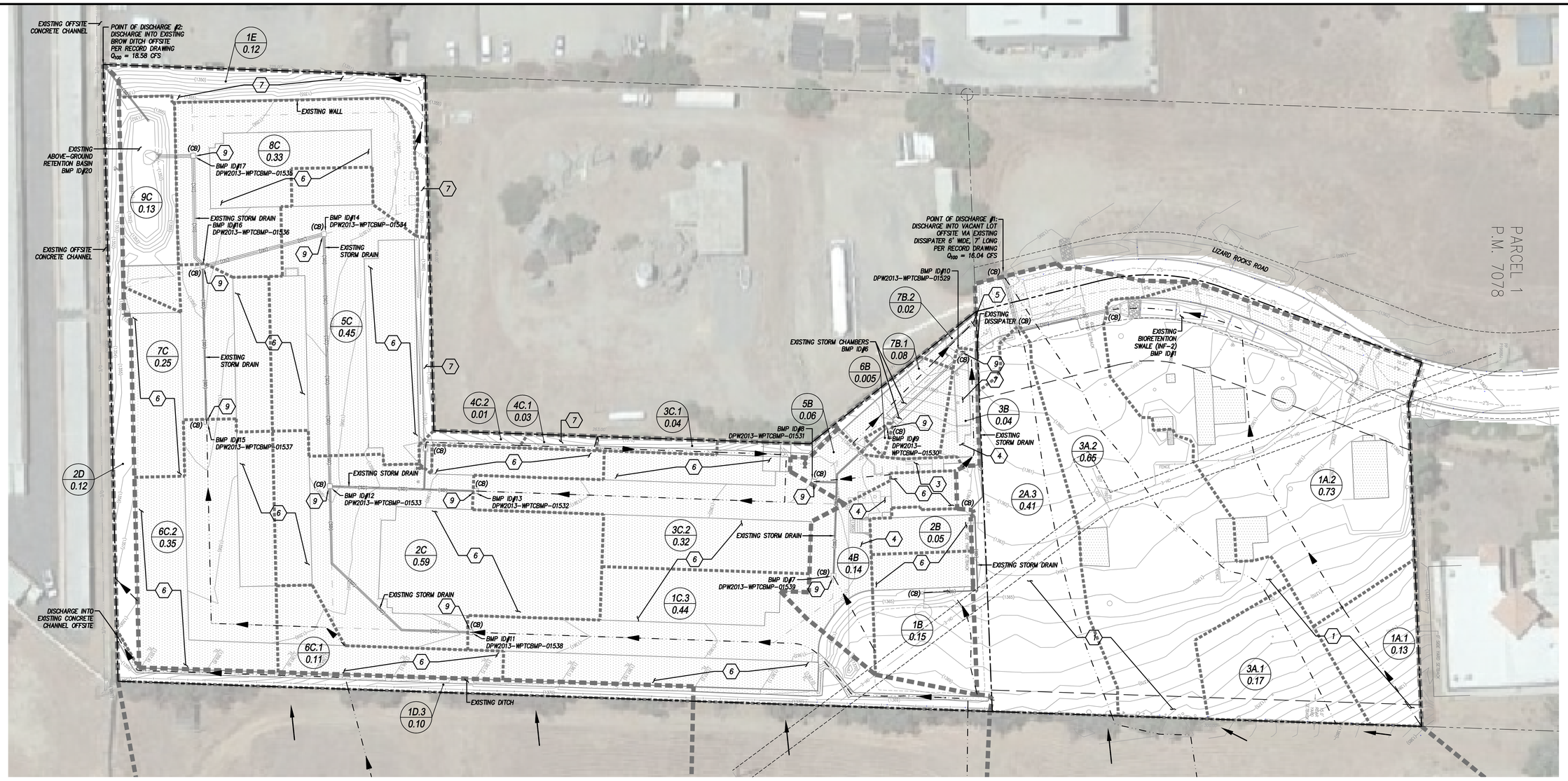
3. Proposed Site Changes, Features, and BMPs

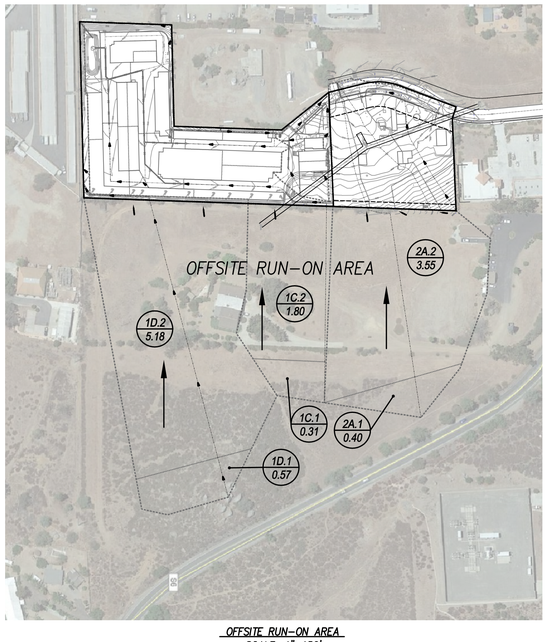
- ☒ Proposed demolition and grading
- ☒ Group 1, 2, and 3 Features[4]
- ☒ Group 4 Features
- ☒ Construction BMPs[5]
- ☒ Baseline source control BMPs
- ☐ Baseline source control BMPs

B. Proposed Features and BMPs Specific to Individual SWQMP Attachments[6]

☒ Attachment 6	☒ SSD-BMP impervious dispersion areas ☐ SSD-BMP tree wells	
☒ Attachment 7	☒ Structural pollutant control BMPs	
☒ Attachment 8	☒ Structural hydromodification management BMPs ☒ Point(s) of Compliance (POC) for hydromodification management ☒ Proposed drainage boundary and drainage area to each POC	
☒ Attachment 9	☐ Onsite CCSYAs	☐ Bypass of onsite CCSYAs ☒ Bypass of upstream offsite CCSYAs

[4] Group 1-4 features and baseline BMPs from PDP SWQMP Tables 2 and 3.
[5] Minimum Construction Stormwater BMPs from PDP SWQMP Table 7.
[6] Identify the location, ID numbers, type, and size/detail of BMPs.





OFFSITE RUN-ON AREA
SCALE: 1"=150'

Drainage Subarea	Existing Condition								BMP Type
	Area		Pervious Area			Impervious Area			
	s.f.	acres	s.f.	acres	% Site	s.f.	acres	% Site	
1A.1	5,462	0.13	5,462	0.13	100.0%	0	0.00	0.0%	Existing Structural BMP (INF-2)
1A.2	31,634	0.73	25,283	0.58	79.9%	6,351	0.15	20.1%	
2A.1	17,628	0.40	17,628	0.40	100.0%	0	0.00	0.0%	(None)
2A.2	154,506	3.55	148,642	3.41	96.2%	5,865	0.13	3.8%	
2A.3	17,766	0.41	16,645	0.38	93.7%	1,121	0.03	6.3%	
3A.1	7,398	0.17	7,398	0.17	100.0%	0	0.00	0.0%	(None)
3A.2	28,122	0.65	22,467	0.52	79.9%	5,655	0.13	20.1%	
"A" Subtotal	**262,515**	**6.03**	**243,524**	**5.59**	**92.8%**	**18,992**	**0.44**	**7.2%**	--
1B	6,481	0.15	4,727	0.11	72.9%	1,754	0.04	27.1%	Existing Structural BMP (Detention vault)
2B	2,080	0.05	304	0.01	14.6%	1,777	0.04	85.4%	
3B	1,670	0.04	409	0.01	24.5%	1,260	0.03	75.5%	
4B	5,984	0.14	1,216	0.03	20.3%	4,768	0.11	79.7%	
5B	2,473	0.06	61	0.001	2.5%	2,412	0.06	97.5%	
6B	215	0.005	0	0.00	0.0%	215	0.00	100.0%	
7B.1	3,561	0.08	345	0.01	9.7%	3,216	0.07	90.3%	
7B.2	667	0.02	78	0.002	11.6%	590	0.01	88.4%	
"B" Subtotal	**23,132**	**0.53**	**7,141**	**0.16**	**30.9%**	**15,991**	**0.37**	**69.1%**	--
1C.1	13,622	0.31	13,622	0.31	100.0%	0	0.00	0.0%	Existing Structural BMP (Detention Pond)
1C.2	78,289	1.80	65,830	1.51	84.1%	12,459	0.29	15.9%	
1C.3	19,303	0.44	2,984	0.07	15.5%	16,319	0.37	84.5%	
2C	25,748	0.59	0	0.00	0.0%	25,748	0.59	100.0%	
3C.1	1,686	0.04	550	0.01	32.6%	1,136	0.03	67.4%	
3C.2	13,939	0.32	512	0.01	3.7%	13,428	0.31	96.3%	
4C.1	1,344	0.03	339	0.01	25.3%	1,004	0.02	74.7%	
4C.2	523	0.01	437	0.01	83.6%	86	0.00	16.4%	
5C	19,224	0.44	971	0.02	5.1%	18,253	0.42	94.9%	
6C.1	4,655	0.11	0	0.00	0.0%	4,655	0.11	100.0%	
6C.2	15,362	0.35	0	0.00	0.0%	15,362	0.35	100.0%	
7C	11,036	0.25	0	0.00	0.0%	11,036	0.25	100.0%	
8C	14,420	0.33	0	0.00	0.0%	14,420	0.33	100.0%	
9C	5,685	0.13	4,410	0.10	80.4%	1,074	0.02	19.6%	
"C" Subtotal	**224,636**	**5.16**	**89,656**	**2.06**	**39.9%**	**134,980**	**3.10**	**60.1%**	--
1D.1	24,922	0.57	24,922	0.57	100.0%	0	0.00	0.0%	(None)
1D.2	225,720	5.18	218,082	5.01	96.6%	7,639	0.18	3.4%	
1D.3	4,278	0.10	2,794	0.06	65.3%	1,484	0.03	34.7%	
2D	5,260	0.12	5,260	0.12	100.0%	0	0.00	0.0%	
"D" Subtotal	**260,180**	**5.97**	**251,057**	**5.76**	**96.5%**	**9,123**	**0.21**	**3.5%**	--
1E	5,296	0.12	5,100	0.12	96.3%	196	0.00	3.7%	Self-Mitigating
"E" Subtotal	**5,296**	**0.12**	**5,100**	**0.12**	**96.3%**	**196**	**0.00**	**3.7%**	
Study Total	**775,760**	**17.81**	**596,479**	**13.69**	**76.9%**	**179,281**	**4.12**	**23.1%**	--

SITE INFORMATION:

1. *UNDERLYING HYDROLOGIC SOIL GROUP:*
   GROUP A SUBAREA 1C.2, 8C, 9C AND 11C
   GROUP C SUBAREA 1A.1, 1A.2, 1B-7B.2, 1C.1, 2C-7C, 10C.1 AND 10C.2
2. *APPROXIMATE DEPTH TO GROUNDWATER = 0 (PERCHED GROUNDWATER)*
3. *NO NATURAL HYDROLOGIC FEATURES*

BASELINE BMPs:

- *GROUP 1* — (1) *NATURAL AREAS, SOILS, & VEGETATION (INCL. TREES)*
- *GROUP 2* — (3) *SIDEWALKS & WALKWAYS*; (4) *PARKING AREAS & LOTS*; (5) *DRIVEWAYS*
- *GROUP 3* — (6) *ROOFTOP AREAS*; (7) *LANDSCAPED AREAS*
- *GROUP 4* — (9) *STORM DRAIN INLETS & CATCH BASINS*

LEGEND:

- *DRAINAGE STUDY AREA BOUNDARY*
- *DRAINAGE SUBAREA BOUNDARY*
- *LONGEST FLOW PATH*
- *DIRECTION OF FLOW*
- 1A / 0.11 — *SUBAREA DESIGNATION / AREA (ACRES)*
- *IMPERVIOUS AREA (148,142 S.F.)*
- (CB) *EXISTING CATCH BASIN*

STRUCTURAL BMP IMPLEMENTED	
BMP ID#	***BMP TYPE***
1	*INF-2: BIORETENTION (EXISTING)*
6	*HYDROMODIFICATION MANAGEMENT (DETENTION VAULT, EXISTING)*
7-17	*MEDIA FILTER DRAIN INSERT (BIOCLEAN GRATE INLET GISB FILTER, EXISTING)*
20	*HYDROMODIFICATION MANAGEMENT (DETENTION BASIN, EXISTING)*

30' 0' 30' 60' 90'
GRAPHIC SCALE: 1"=30'

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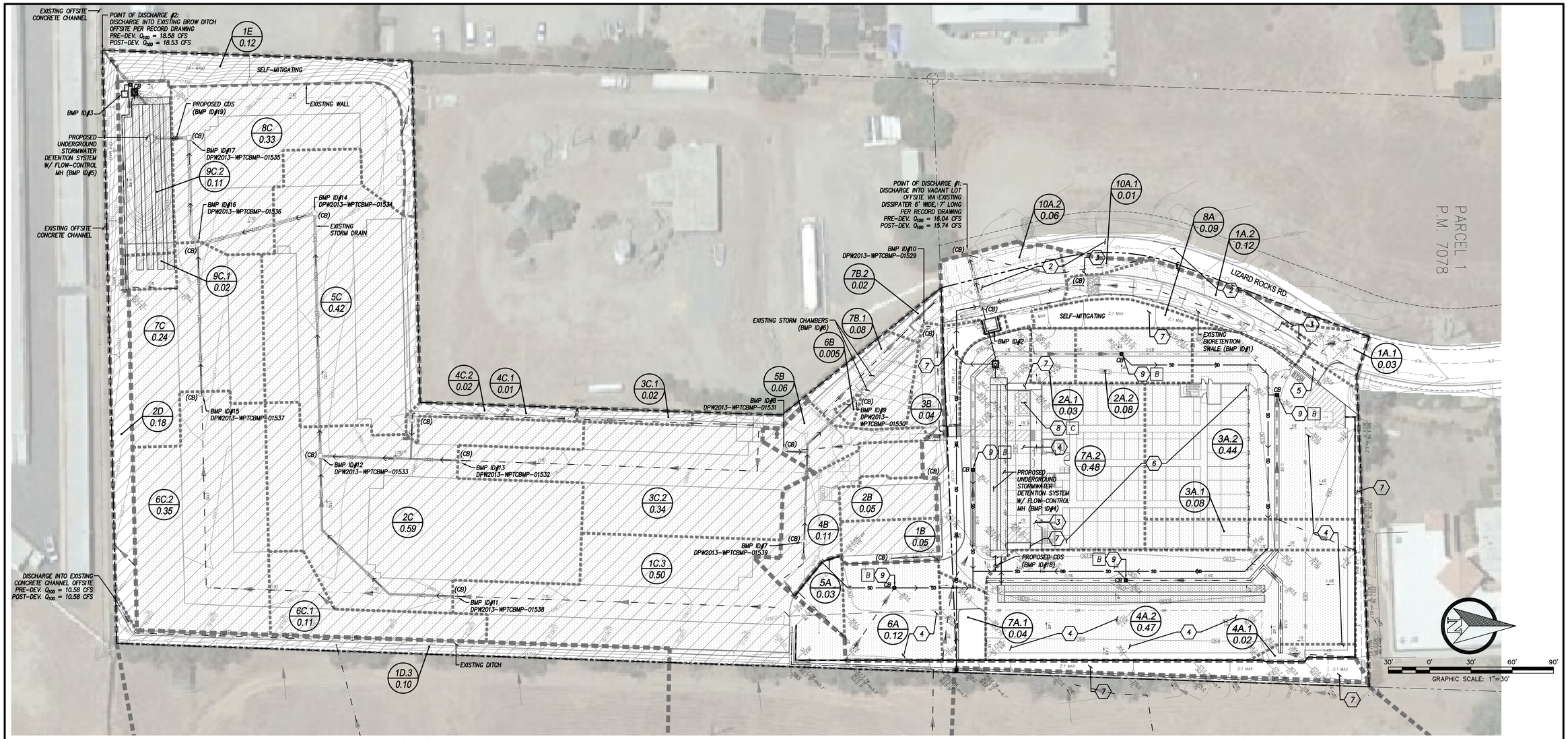
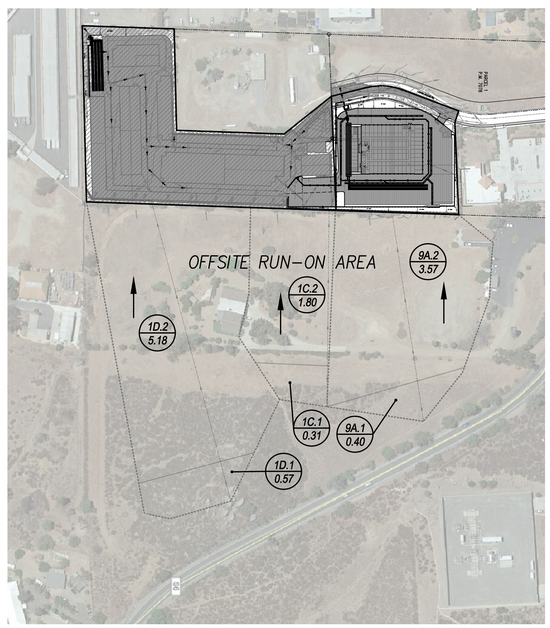
NO.:	REVISION:	DATE:

PROJECT: **GS VALLEY EXPANSION**
28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA
DRAWING NAME: **DMA EXHIBIT - EXISTING**

ISSUE:	SWQMP
DATE:	5/27/2021
CHECKED: JH	DRAWN: JH
DRAWING FILE:	19132DMA
PROJECT NO.:	19-132
SHEET NUMBER:	1
OF	1 SHEETS
SCALE:	AS SHOWN

FILENAME: M:\2019\19-132 Greens Global Valley Center SD\SWQMP\19132 DMA EXH - EXIST.dwg, LAST SAVED ON: May 25 2021 7:13pm PLOTTED BY: JULIE, ON: May 27 2021 1:03pm, CFC





OFFSITE RUN-ON AREA
SCALE: 1"=150'

SITE INFORMATION:

1. UNDERLYING HYDROLOGIC SOIL GROUP:

   GROUP A SUBAREA 1C.3, 8C–9C.2, 1D.2 AND 1E
   GROUP C SUBAREA 1A.1–10A.2, 1B–7B.2, 1C.1, 1C.2, 2C–7C, 1D.1, 1D.2 AND 2D
2. APPROXIMATE DEPTH TO GROUNDWATER = 0 (PERCHED GROUNDWATER)
3. NO NATURAL HYDROLOGIC FEATURES

Drainage Subarea	Proposed Condition: Area s.f.	Area acres	Pervious Area s.f.	Pervious Area acres	Pervious Area % Site	Impervious Area s.f.	Impervious Area acres	Impervious Area % Site	BMP Type	DCV cu-ft
1A.1	1,385	0.03	79	0.00	5.7%	1,307	0.03	94.3%	Structural BMP (Existing INF-2)	0
1A.2	5,109	0.12	2,910	0.07	57.0%	2,199	0.05	43.0%		
2A.1	1,294	0.03	0	0.00	0.0%	1,294	0.03	100.0%		273
2A.2	3,370	0.08	0	0.00	0.0%	3,370	0.08	100.0%		
3A.1	3,406	0.08	0	0.00	0.0%	3,406	0.08	100.0%		1,243
3A.2	19,090	0.44	1,477	0.03	7.7%	17,614	0.40	92.3%		
4A.1	755	0.02	0	0.00	0.0%	755	0.02	100.0%	Structural BMP (BF-3: MWS-L-8-8-V)	1,247
4A.2	20,561	0.47	0	0.00	0.0%	20,561	0.47	100.0%		
5A	1,195	0.03	0	0.00	0.0%	1,195	0.03	100.0%		70
6A	5,030	0.12	0	0.00	0.0%	5,030	0.12	100.0%		294
7A.1	1,852	0.04	612	0.01	33.1%	1,239	0.03	66.9%		
7A.2	20,794	0.48	2,102	0.05	10.1%	18,693	0.43	89.9%		1,178
8A	3,367	0.08	3,367	0.077	100.0%	0	0.00	0.0%	Self-Mitigating	N/A
9A.1	17,628	0.40	17,628	0.40	100.0%	0	0.00	0.0%	(None)	2,926
9A.2	155,511	3.57	148,742	3.41	95.6%	6,769	0.16	4.4%		
10A.1	1,307	0.03	0	0.00	0.0%	1,307	0.03	100.0%	(None)	283
10A.2	4,003	0.09	510	0.01	12.7%	3,492	0.08	87.3%		
"A" Subtotal	**265,658**	**6.10**	**177,426**	**4.07**	**66.8%**	**88,232**	**2.03**	**33.2%**	--	**7,425**
1B	2,163	0.05	372	0.01	17.2%	1,791	0.04	82.8%		107
2B	2,080	0.05	304	0.01	14.6%	1,777	0.04	85.4%		105
3B	1,670	0.04	409	0.01	24.5%	1,260	0.03	75.5%	Structural BMP (Existing Detention vault)	76
4B	4,789	0.11	0	0.00	0.0%	4,789	0.11	100.0%		280
5B	2,473	0.06	61	0.001	2.5%	2,412	0.06	97.5%		141
6B	215	0.005	0	0.00	0.0%	215	0.00	100.0%		13
7B.1	3,561	0.08	345	0.01	9.7%	3,216	0.07	90.3%		225
7B.2	667	0.02	78	0.002	11.6%	590	0.01	88.4%		
"B" Subtotal	**17,619**	**0.40**	**1,570**	**0.04**	**8.9%**	**16,049**	**0.37**	**91.1%**	--	**951**
1C.1	13,622	0.31	13,622	0.31	100.0%	0	0.00	0.0%		
1C.2	78,289	1.80	65,830	1.51	84.1%	12,459	0.29	15.9%		2,953
1C.3	21,674	0.50	4,160	0.10	19.2%	17,514	0.40	80.8%		
2C	25,748	0.59	0	0.00	0.0%	25,748	0.59	100.0%		1,506
3C.1	1,686	0.04	550	0.01	32.6%	1,136	0.03	67.4%		
3C.2	13,939	0.32	512	0.01	3.7%	13,428	0.31	96.3%		863
4C.1	1,344	0.03	339	0.01	25.3%	1,004	0.02	74.7%		
4C.2	523	0.01	437	0.01	83.6%	86	0.00	16.4%		69
5C	19,224	0.44	971	0.02	5.1%	18,253	0.42	94.9%	Flow-thru Treatment Control (Detention Vault & Existing FT-2)	1,075
6C.1	4,655	0.11	0	0.00	0.0%	4,655	0.11	100.0%		1,171
6C.2	15,362	0.35	0	0.00	0.0%	15,362	0.35	100.0%		
7C	10,662	0.24	0	0.00	0.0%	10,662	0.24	100.0%		624
8C	14,420	0.33	0	0.00	0.0%	14,420	0.33	100.0%		844
9C.1	1,004	0.02	38	0.001	3.7%	966	0.02	96.3%	Structural BMP (BF-3: MWS-L-4-4-C)	
9C.2	4,855	0.11	347	0.01	7.1%	4,508	0.10	92.9%		324
"C" Subtotal	**227,007**	**5.21**	**86,806**	**1.99**	**38.2%**	**140,201**	**3.22**	**61.8%**	--	**9,056**
1D.1	24,922	0.57	24,922	0.57	100.0%	0	0.00	0.0%		
1D.2	225,720	5.18	218,082	5.01	96.6%	7,639	0.18	3.4%	(None)	2,320
1D.3	4,278	0.10	2,794	0.06	65.3%	1,484	0.03	34.7%		
2D	5,260	0.12	5,260	0.12	100.0%	0	0.00	0.0%		34
"D" Subtotal	**260,180**	**5.97**	**251,057**	**5.76**	**96.5%**	**9,123**	**0.21**	**3.5%**	--	**324**
1E	5,296	0.12	5,100	0.12	96.3%	196	0.00	3.7%	Self-Mitigating	N/A
"E" Subtotal	**5,296**	**0.12**	**5,100**	**0.12**	**96.3%**	**196**	**0.00**	**3.7%**	--	**N/A**
Study Total	**775,760**	**17.81**	**521,959**	**11.98**	**67.3%**	**253,801**	**5.83**	**32.7%**	--	**17,756**

LEGEND:

- DRAINAGE STUDY AREA BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- LONGEST FLOW PATH
- DIRECTION OF FLOW
- 1A / 0.11 — SUBAREA DESIGNATION / AREA (ACRES)
- LIMIT OF GRADING (ALL EXISTING FEATURES WITHIN LIMIT OF GRADING TO BE DEMOLISHED)
- DEVELOPED SITE AREA
- IMPERVIOUS AREA (253,801 S.F.)
- (CB) EXISTING CATCH BASIN
- CB PROPOSED CATCH BASIN

STRUCTURAL BMP IMPLEMENTED

BMP ID#	BMP TYPE
1	INF-2: BIORETENTION (EXISTING)
2	BF-3: PROPRIETARY BIOFILTRATION (BIOCLEAN MODULAR WETLAND SYSTEM MWS-L-8-8-V)
3	BF-3: PROPRIETARY BIOFILTRATION (BIOCLEAN MODULAR WETLAND SYSTEM MWS-L-4-4-C)
4	HYDROMODIFICATION MANAGEMENT (DETENTION VAULT)
5	HYDROMODIFICATION MANAGEMENT (DETENTION VAULT)
6	HYDROMODIFICATION MANAGEMENT (DETENTION VAULT, EXISTING)
7–17	MEDIA FILTER DRAIN INSERT (BIOCLEAN GRATE INLET GISB FILTER, EXISTING)
18–19	HYDRODYNAMIC SEPARATOR FOR PRE-TREATMENT (CDS UNIT)

BASELINE BMPs:

- GROUP 2
  - 2 STREETS AND ROADS
  - 3 SIDEWALKS & WALKWAYS
  - 4 PARKING AREAS & LOTS
  - 5 DRIVEWAYS
- GROUP 3
  - 6 ROOFTOP AREAS
  - 7 LANDSCAPED AREAS
- GROUP 4
  - 8 TRASH & REFUSE STORAGE
  - 9 STORM DRAIN INLETS & CATCH BASINS

BASELINE SOURCE CONTROL BMPs:

- A PREVENTION OF ILLICIT DISCHARGES INTO THE MS4
- B STORM DRAIN SYSTEM STENCILING OR SIGNAGE
- C PROTECTION OF TRASH STORAGE AREAS FROM RAINFALL, RUN-ON, RUNOFF, AND WIND DISPERSAL

CONSTRUCTION BMPs:

EROSION CONTROL FOR DISTURBED SLOPES
- SS-2, SS-4 VEGETATION STABILIZATION PLANTING (SUMMER)
- SS-3 BONDED FIBER MATRIX OR STABILIZED FIBER MATRIX (WINTER)
- SS-7 PHYSICAL STABILIZATION EROSION CONTROL BLANKET (WINTER)

EROSION CONTROL FOR DISTURBED FLAT AREAS (SLOPE < 5%)
- SS-3, SS-4, SS-7 USE OF ITEM A EROSION CONTROL MEASURES ON FLAT AREAS

ENERGY DISSIPATION
- SS-10 ENERGY DISSIPATER OUTLET PROTECTION

SEDIMENT CONTROL FOR ALL DISTURBED AREAS
- SC-5 FIBER ROLLS (STRAW WATTLES)
- SC-6, SC-8 GRAVEL & SAND BAGS
- SC-10 STORM DRAIN INLET PROTECTION

PREVENTING OFFSITE TRACKING OF SEDIMENT
- TC-1 STABILIZED CONSTRUCTION ENTRANCE
- SC-7 STREET SWEEPING AND VACUUMING

MATERIALS MANAGEMENT
- WM-1 MATERIAL DELIVERY & STORAGE
- WM-4 SPILL PREVENTION AND CONTROL

WASTE MANAGEMENT
- WM-8 WASTE MANAGEMENT CONCRETE WASTE MANAGEMENT
- WM-5 SOLID WASTE MANAGEMENT
- WM-9 SANITARY WASTE MANAGEMENT
- WM-6 HAZARDOUS WASTE MANAGEMENT

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NOT FOR CONSTRUCTION

NO.:	REVISION:	DATE:

PROJECT: GS VALLEY EXPANSION
28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

DRAWING NAME: DMA EXHIBIT - PROPOSED

ISSUE:	SWQMP
DATE:	5/27/2021
CHECKED: JH	DRAWN: JH
DRAWING FILE:	19132DMA
PROJECT NO.:	19-132
SHEET NUMBER:	1
OF	1 SHEETS
SCALE:	AS SHOWN

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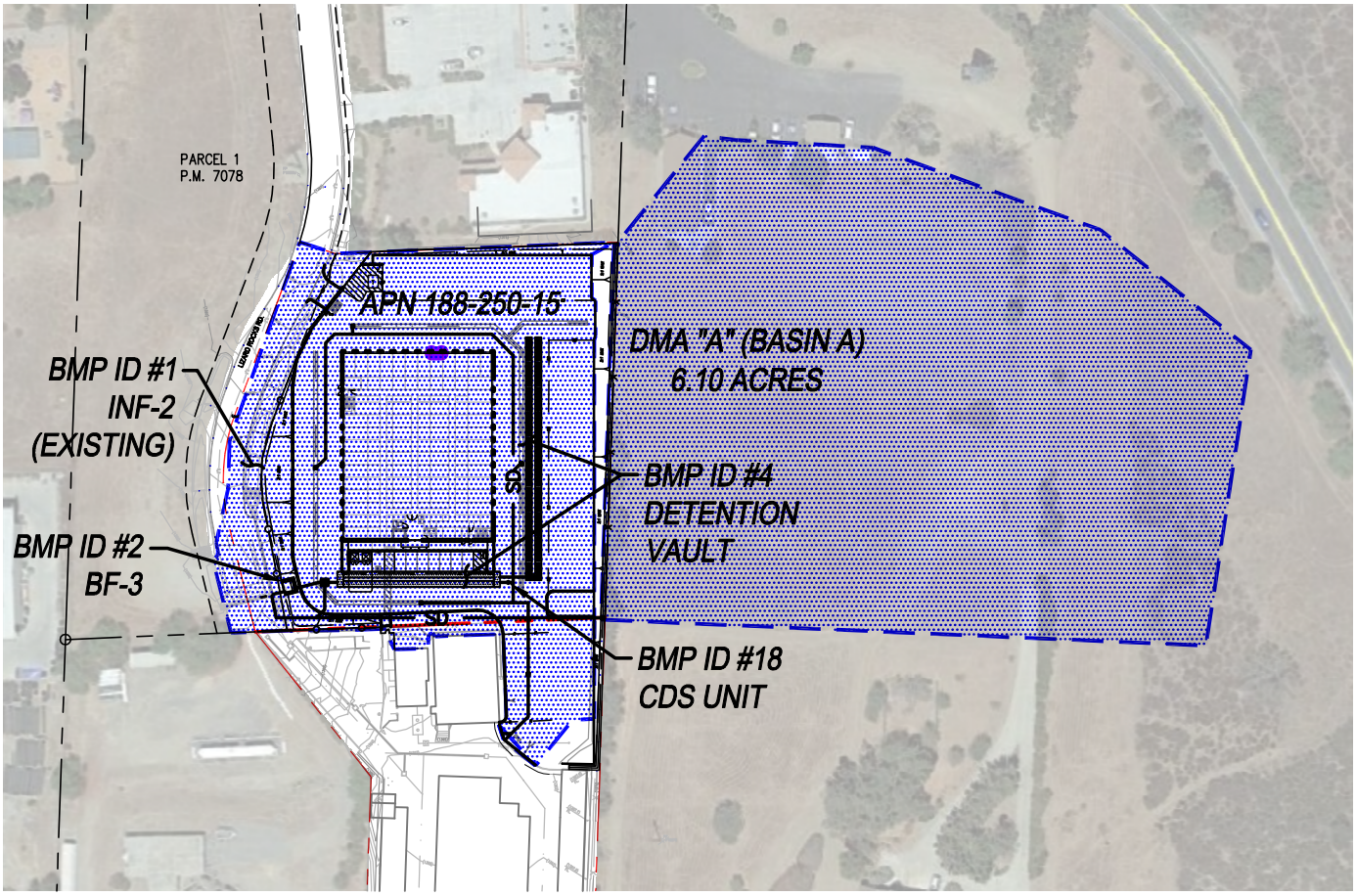
2.2 Individual Structural BMP DMA Mapbook

- Use this page as a cover sheet for the Structural DMA Mapbook.
- An individual Structural DMA Mapbook must be submitted for any project site with one or more structural BMPs. One Mapbook is required for each unique subsequent owner with responsibility for maintenance of a Structural BMP. Mapbook exhibits will be incorporated as exhibits in Stormwater Maintenance Agreements (SWMAs) and Maintenance Notifications (MNs). See Attachment 11 for additional information on maintenance agreements. If the Mapbook has been provided for each subsequent owner in Attachment 11, they are not required here.
- Place each map on 8.5"x11" paper.
- Show at a minimum the DMA, Structural BMP, Assessor's parcel boundaries with parcel numbers, and any existing hydrologic features within the DMA.

☒	All Mapbooks are attached
☐	All Mapbooks are in Attachment 11



SCALE: 1"=150'

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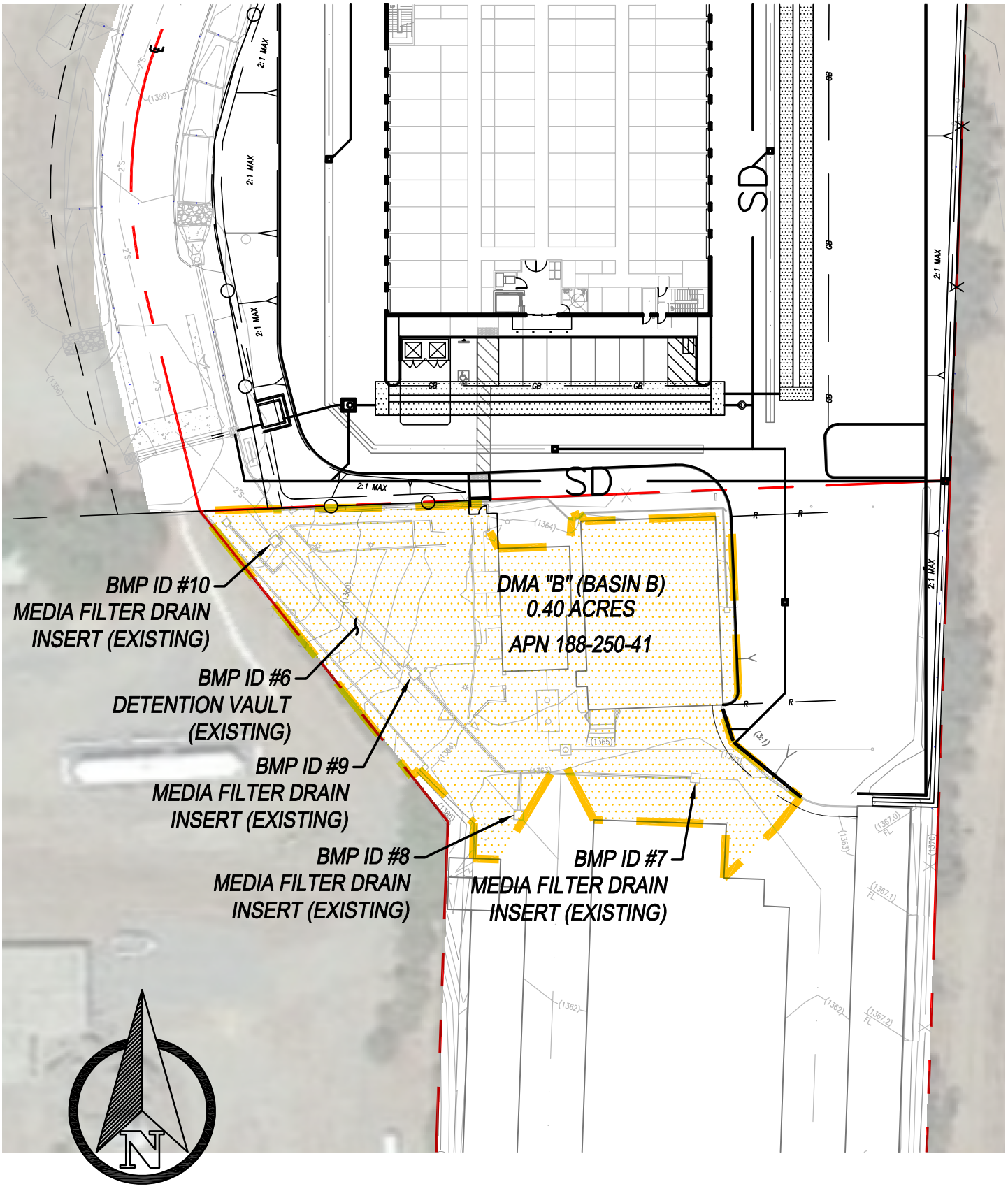
Anaheim Hills, CA 92808
714-685-6860

DMA MAPBOOK 1 – BASIN A

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA



SCALE: 1"=50'

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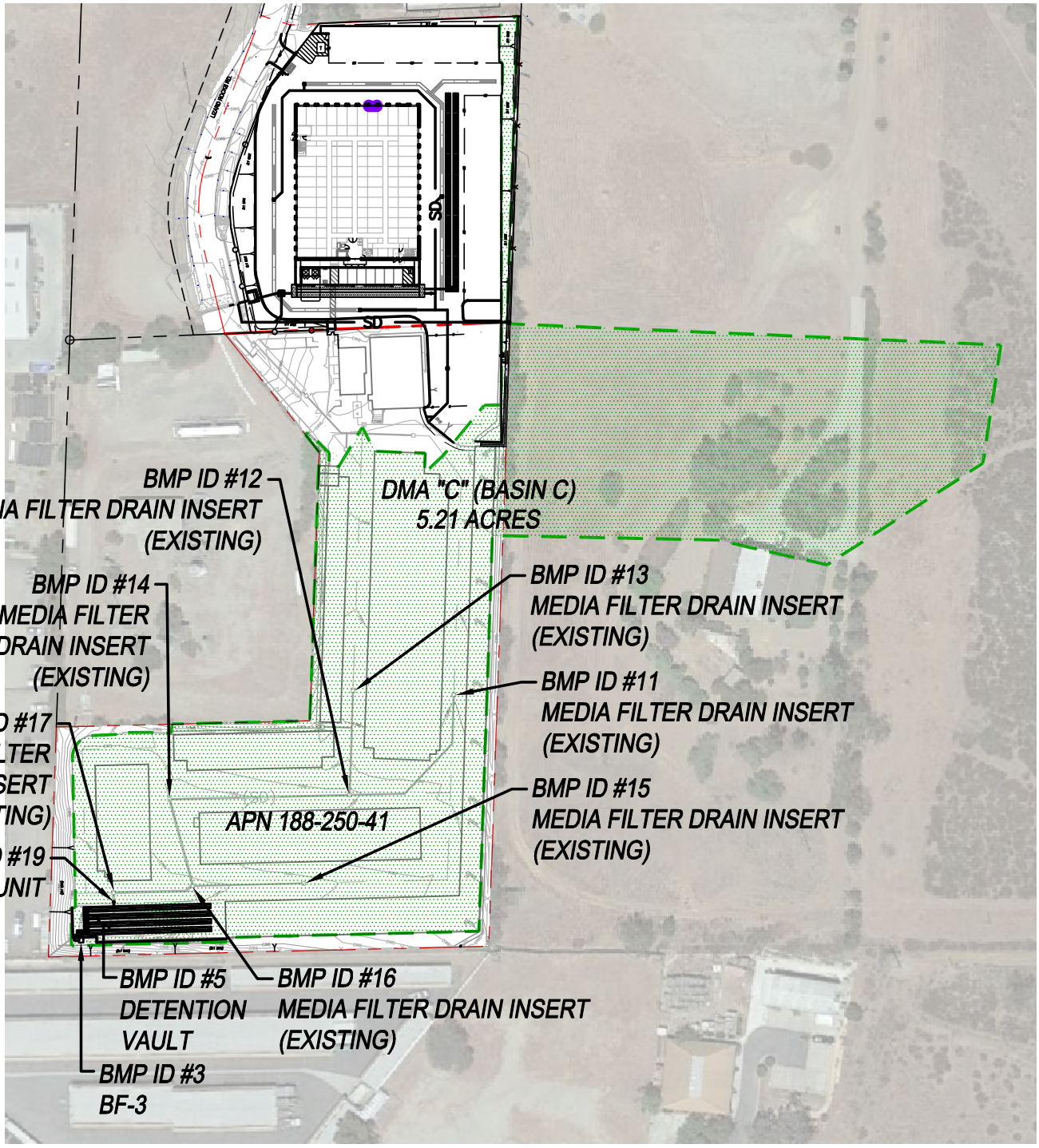
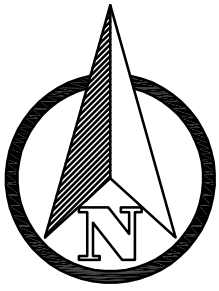
Anaheim Hills, CA 92808
714-685-6860

DMA MAPBOOK 2 – BASIN B

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA





SCALE: 1"=150'

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Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
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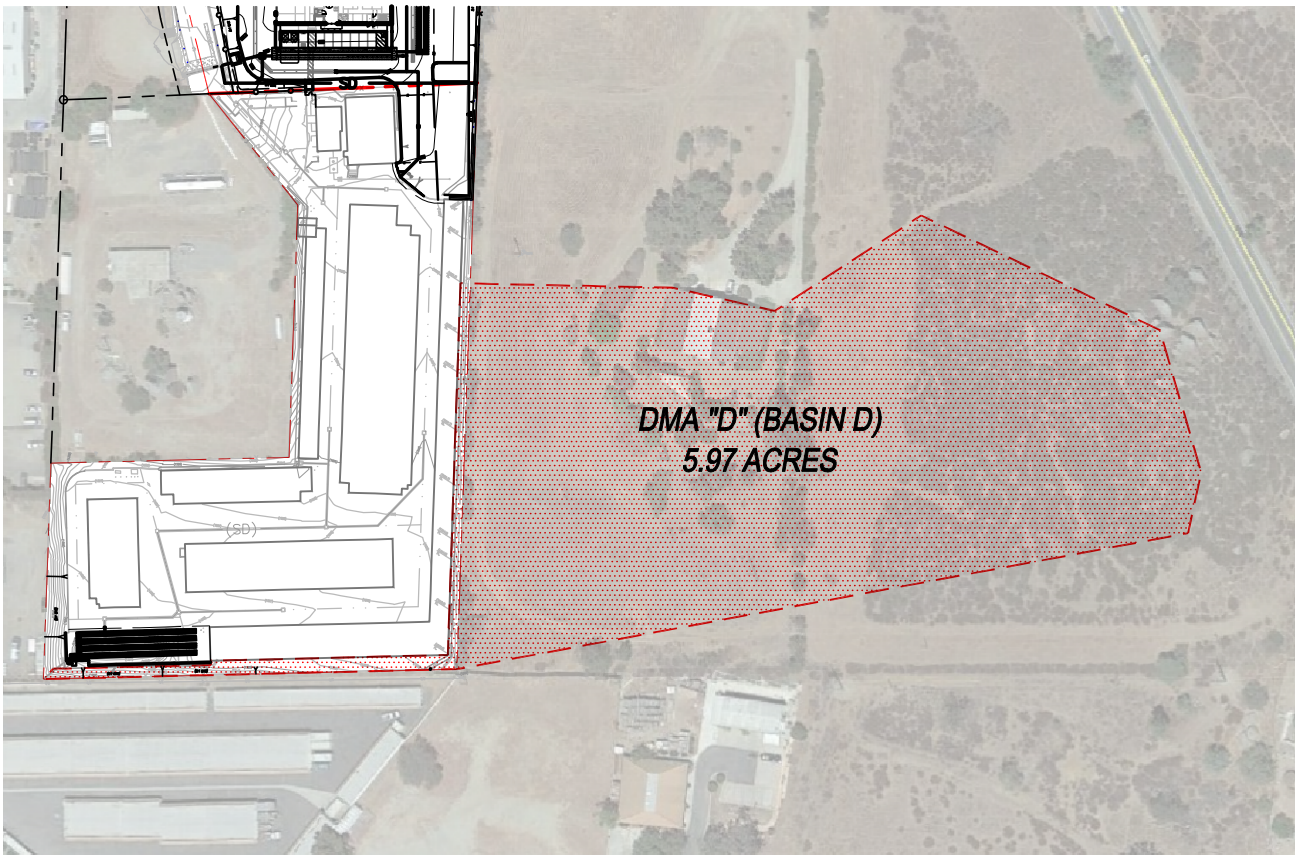
714-685-6860

DMA MAPBOOK 3 – BASIN C

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA



SCALE: 1"=200'

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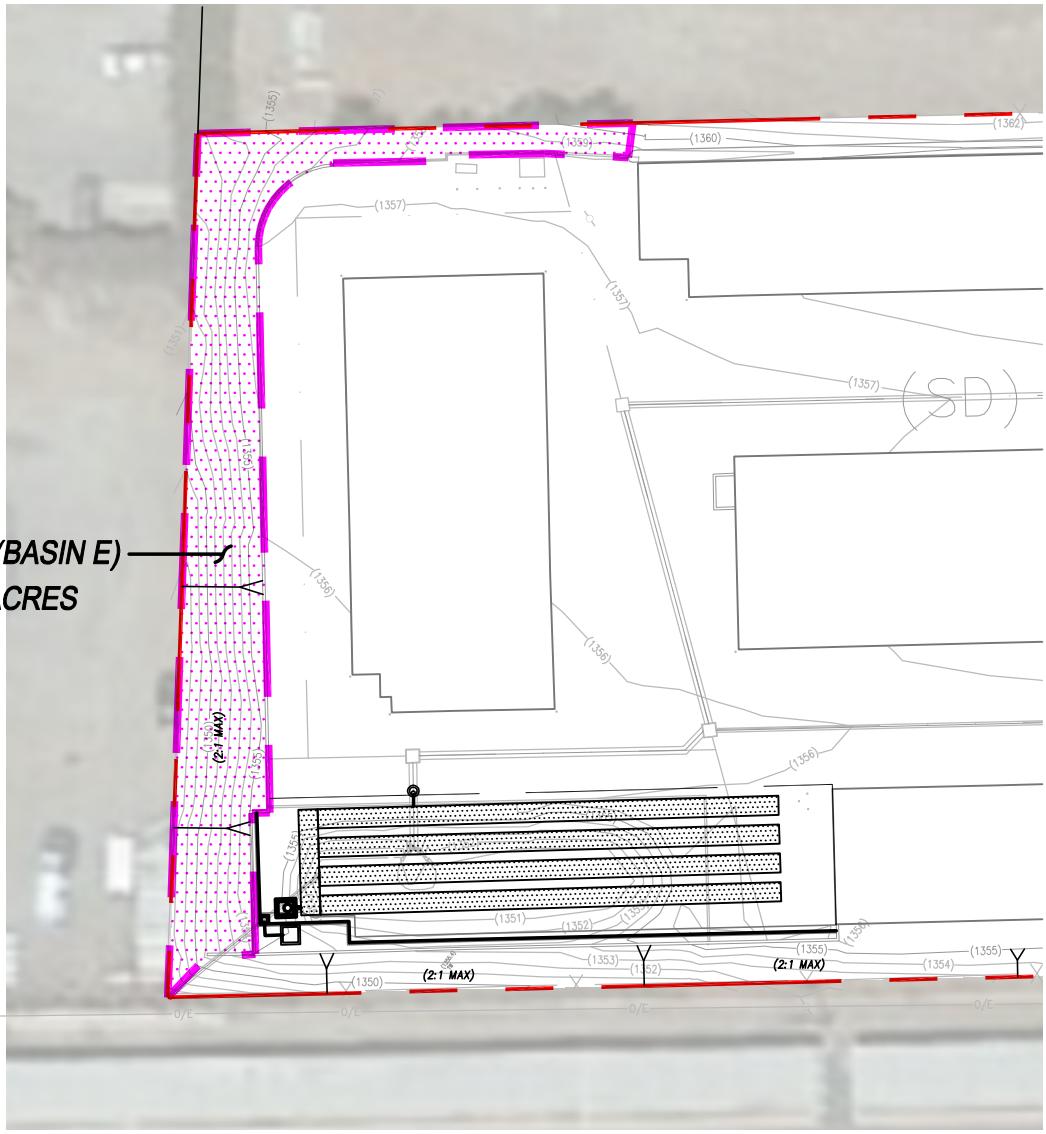
714-685-6860

DMA MAPBOOK 4 – BASIN D

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA



SCALE: 1"=50'

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
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Anaheim Hills, CA 92808
714-685-6860

DMA MAPBOOK 5 – BASIN E

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

2.3 Construction Plan Sets

- DMAs, features, and BMPs identified and described in this attachment must also be shown on all applicable construction and landscape plans.
- As applicable, plan sheets must identify:
    - All features and BMPs identified in Sub-attachment 2.1 (DMA Exhibits).
    - The additional information listed below.
- Use this checklist to ensure required information is included on each plan (copy as needed).

Plan Type	**Conceptual Plan**
Required Information[7]	
☐ Structural BMP(s) and Significant Site Design BMPs (if applicable) with ID numbers.	
☒ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit.	
☒ Details and specifications for construction of Structural BMP(s) and Significant Site Design BMPs (if applicable).	
☐ Signage indicating the location and boundary of structural BMP(s) as required by County staff.	
☐ How to access the structural BMP(s) to inspect and perform maintenance.	
☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).	
☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP).	
☐ Recommended equipment to perform maintenance.	
☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.	
☐ Include landscaping plan sheets (if available) showing vegetation requirements for vegetated structural BMP(s).	
☐ All BMPs must be fully dimensioned on the plans.	
☒ When proprietary BMPs are used, site-specific cross-section with outflow, inflow, and manufacturer model number must be provided. Photocopies of general brochures are not acceptable.	
☐ Include all source control and site design measures described in the SWQMP.	
☐ Include all construction BMPs described in the SWQMP.	

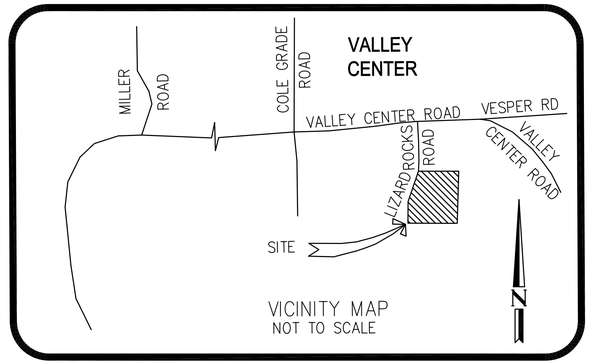
[7] For Building Permit Applications, refer to Form PDS 272, https://www.sandiegocounty.gov/content/dam/sdc/pds/docs/pds272.pdf

PRELIMINARY GRADING PLAN

FOR

24835 LIZARD ROCKS ROAD

VALLEY CENTER, CA 92082



VICINITY MAP
NOT TO SCALE

NOTES

NOTE THAT THE PROJECT WILL REQUIRE A GRADING PERMIT. PLEASE CONSIDER THE POTENTIAL IMPACTS TO SURROUNDING RESIDENCES FROM GRADING THE SITE,WHICH INCLUDE BUT ARE NOT LIMITED TO, AESTHETICS, HYDROLOGY, NOISE, VISUAL, ETC.

1. PLEASE NOTE ANY OFFSITE GRADING WILL REQUIRE A LETTER OF PERMISSION TO GRADE FROM THE ADJACENT PROPERTY OWNER(S).

2. PLEASE NOTE ANY ACCESS ONTO AN ADJACENT PARCEL WILL REQUIRE A DEDICATED ACCESS EASEMENT FROM THE ADJACENT PROPERTY OWNER(S).

3. PLEASE NOTE ANY PROPOSED UTILITIES OVER OR UNDER AN ADJACENT PARCEL WILL REQUIRE A DEDICATED UTILITY EASEMENT FROM THE ADJACENT PROPERTY OWNER(S).

   THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HERON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

4. THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HERON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

BENCHMARK

MONUMENT NO. 1031 PER R. OF S. 14689, 2" IRON PIPE W/BRASS DISC MARKED "GPS KE31" AT COLE GRADE ROAD, 68' WESTERLY OF VALLEY CENTER ROAD INTERSECTION; NGVD 29; ELEV.=1349.30 MSL

BASIS OF BEARINGS:

THE BASIS OF BEARING FOR THIS SURVEY IS THE EASTERLY LINE OF PARCEL 3 OF PARCEL MAP NO. 7078 PER FILE NO. 78-125318 RECORDED MARCH 30, 1978 IN THE COUNTY OF SAN DIEGO BEING NORTH 01°57'16" EAST.

ASSESSOR'S PARCEL NUMBER:

188-250-15

CONTACTS

OWNER/DEVELOPMENT
GREENS REAL ESTATE GROUP
910 SOUTH EL CAMINO REAL
SUITE 100 SAN CLEMENTE, CA 92672
CONTACT: NEIL R. KADAKIA
(949)-546-0563

ENGINEER
DRC ENGINEERING INC.
160 SOUTH OLD SPRINGS ROAD, SUITE 210
ANAHEIM HILLS, CA 92808
CONTACT: GREGORY COOKE
(714)-685-6860

LINETYPE LEGEND

AC DIKE (LABEL TYPES)
CURB & GUTTER (LABEL) — TC (TOP OF CURB) / LG (LIP OF GUTTER)
DITCH - LINED
DITCH - UNLINED
EXIST EDGE OF PAVEMENT
FENCE - BARBED WIRE — X X X
FENCE - CHAINLINK
FENCE - WOOD
FIBER ROLL — FR FR FR
GUARD RAIL
RETAINING WALL (CMU)
RETAINING WALL (GENERAL, LABEL TYPE)
RIGHT OF WAY — R/W
SLOPE LIMIT LINES
STORM DRAIN PIPE — SD
CABLE TV — C C C C C
ELECTRICAL — E E E E E
FIBER OPTIC — FO FO FO FO FO
GAS LINE — G G G G G
METHANE GAS — MG MG MG MG MG
OVERHEAD ELECTRICAL — OH-E OH-E OH-E
SEWER LINE — S S S S S
TELEPHONE — T T T T T
WATER LINE — W W W W W
CENTER LINE — ℄
PROPOSED CONTOUR — XXX
EXISTING CONTOUR — (XXX)
FIRE HYDRANT
IRRIGATION CONTROL VALVE
LIGHT STANDARD
PALM TREE
POWER POLE
SEWER MANHOLE
TRAFFIC SIGNAL
TREE
YARD LIGHT
PROPERTY LINE
RETAINING WALL CMU

PRELIMINARY EARTHWORK QUANTITY ESTIMATE

	CUT (CY)	FILL (CY)
RAW	9,380	1,390
TOTALS	9,380	1,390

NET = 7,990 CY EXPORT

THE ABOVE QUANTITIES DO NOT REFLECT OR ANY SPECIAL CONDITIONS THAT MAY BE SPECIFIED IN THE PRELIMINARY SOILS REPORT AND ARE FOR REFERENCE AND FEE PURPOSES ONLY. SINCE THE ENGINEER CANNOT CONTROL THE EXACT METHOD OR MEANS USED BY THE CONTRACTOR DURING GRADING OPERATION, NOR CAN THE ENGINEER GUARANTEE THE EXACT SOIL CONDITION OVER THE ENTIRE SITE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR FINAL EARTHWORK QUANTITIES FOR BIDDING, CONTRACT, AND CONSTRUCTION PURPOSES. IF IT APPEARS THERE WILL BE AN EXCESS OR SHORTAGE OF MATERIAL, THE CONTRACTOR MAY NOTIFY THE ENGINEER TO DETERMINE IF POSSIBLE GRADE ADJUSTMENTS CAN BE MADE TO ALLEVIATE SAID MATERIAL EXCESS OR SHORTAGE.

ABBREVIATIONS:

AC. – ACRES
A.P.N. – ASSESSOR'S PARCEL NUMBER
ARCH. – ARCHITECTURE
CL – CENTERLINE
CB – CATCH BASIN
FH – FIRE HYDRANT
FF – FINISHED FLOOR
MH – MANHOLE
SDMH – STORM DRAIN MANHOLE
CO – SEWER CLEANOUT
DDC – DOUBLE DETECTOR CHECK
FDC – FIRE DEPARTMENT CONNECTION
PIV – POST INDICATOR VALVE
WM – WATER METER
WV – WATER VALVE
SS MH, SMH – SEWER MANHOLE
EX./EXIST. – EXISTING
PROP. – PROPOSED
MIN – MINIMUM
BOT – BOTTOM
CF – CURB FACE
R/W – RIGHT OF WAY
SD – STORM DRAIN
SS – SEWER
WA – WATER
FW – FIRE WATER
TYP. – TYPICAL
TG – TOP OF GRATE
TC – TOP OF CURB
FL – FLOWLINE
FS – FINISHED SURFACE
FG – FINISH GRADE
PP – POWER POLE
PB – PULLBOX
DI – DRAINAGE INLET
INV – INVERT ELEVATION
LA – LANDSCAPE AREA
BCR – BEGINNING OF CURVE RADIUS
ECR – END OF CURVE RADIUS
GB – GRADE BREAK
TE – TRASH ENCLOSURE
PL – PROPERTY LINE

SHEET INDEX	
1	COVER SHEET
2-3	PRELIMINARY GRADING PLAN
4	PRELIMINARY STORM DRAIN PLAN
5-6	DRAINAGE AREA MAP

PREPARED BY:
DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860
GREGORY R. COOKE R.C.E. 39478 DATE

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER * GREGORY R. COOKE * No. 39478 Exp. 12-31-21 * CIVIL * STATE OF CALIFORNIA

NO: REVISION: DATE:

PROJECT: **GS VALLEY EXPANSION**
24835 LIZARD ROCKS ROAD
VALLEY CENTER, CA 92082

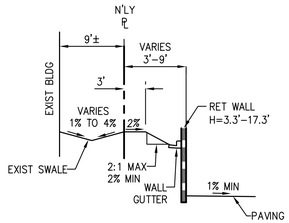
DRAWING NAME: **COVER SHEET**

ISSUE:	CONCEPTUAL
DATE:	05/25/2021
CHECKED: GRC	DRAWN: MS
DRAWING FILE:	19132CG
PROJECT NO.:	19-132
SHEET NUMBER:	1
OF	6 SHEETS
SCALE:	AS SHOWN

FILENAME: M:\2019\19-132 Greens Global Valley Center SD\CONCEPT\19132 CGD1_CS.dwg, LAST SAVED ON: May 25 2021 5:48pm PLOTTED BY: JULIE ON: May 25 2021 6:54pm, CFG:

PRELIMINARY CONSTRUCTION NOTES

1. CONSTRUCT 6" CONCRETE CURB
2. CONSTRUCT 36" CONCRETE GUTTER
3. CONSTRUCT AC/AB
4. CONSTRUCT ADA RAMP
5. CONSTRUCT GRATE INLET
6. CONSTRUCT DRIVEWAY W=20' PER SAN DIEGO REGIONAL STD. DWG. G-14A
7. TRASH ENCLOSURE PER SEPARATE ARCH PLANS
8. TRANSFORMER PER SEPARATE ELECTRICAL PLANS
9. ACCESS GATE PER SEPARATE ARCH PLANS
10. RETAINING WALL PER SEPARATE WALL PLAN
11. CONSTRUCT 36" WIDE GUNITE INTERCEPTOR DRAIN
12. CONSTRUCT 6" CONCRETE CURB AND GUTTER
13. CONSTRUCT CHANNEL DRAIN



CROSS SECTION A-A
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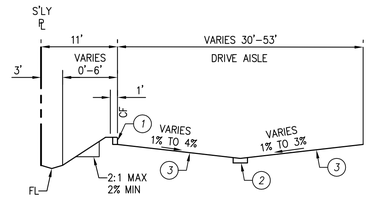

CROSS SECTION C-C
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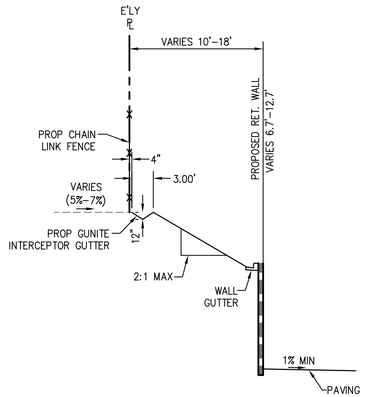
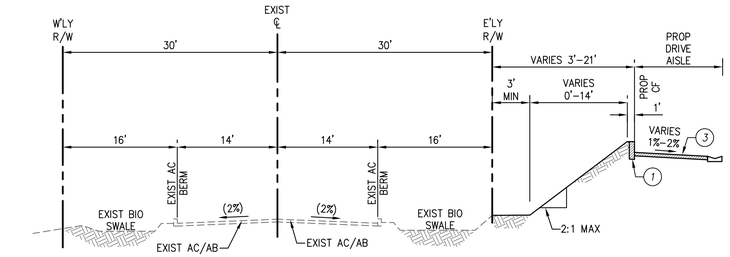


CROSS SECTION B-B
SCALE:1"=10'



CROSS SECTION D-D
SCALE:1"=10'

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Civil Engineering/Land Surveying/Land Planning
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Suite 210
Anaheim Hills, CA 92808
714-685-6860
R.C.E. 39478 DATE
GREGORY R. COOKE

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER * GREGORY R. COOKE * No. 39478 * Exp. 12-31-21 * CIVIL * STATE OF CALIFORNIA

NO.:	REVISION:	DATE:

PROJECT: **GS VALLEY EXPANSION**
24835 LIZARD ROCKS ROAD
VALLEY CENTER, CA 92082

DRAWING NAME: **PRELIMINARY GRADING PLAN**

ISSUE:	CONCEPTUAL
DATE:	05/25/2021
CHECKED: GRC	DRAWN: MS
DRAWING FILE: 19132CG	
PROJECT NO.: 19-132	
SHEET NUMBER:	2
OF	6 SHEETS
SCALE: AS SHOWN	

SEE SHEET 3 FOR CONTINUATION

GRAPHIC SCALE: 1 INCH = 20 FT

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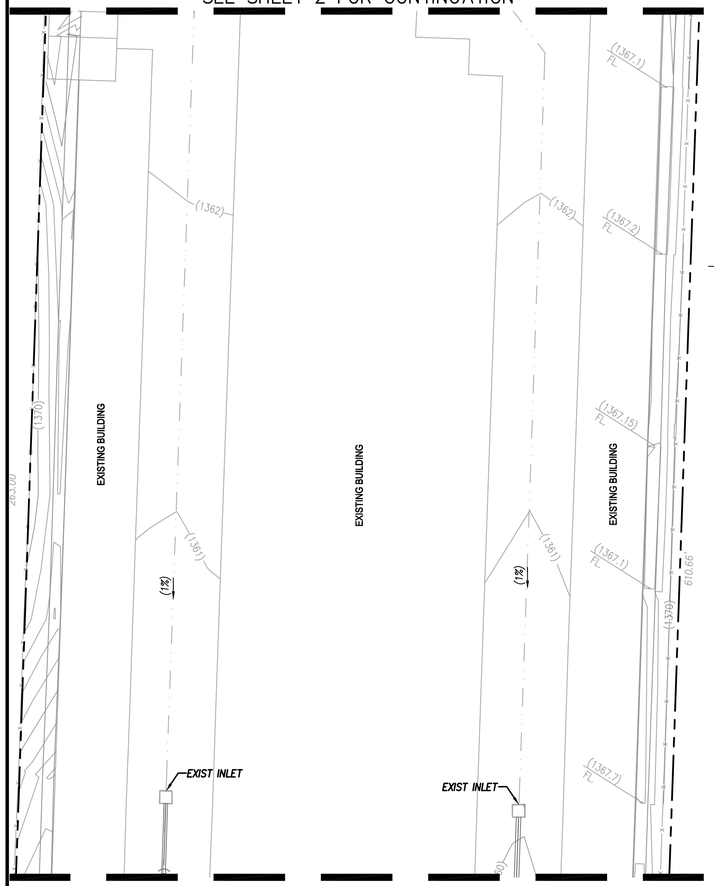
SEE SHEET 2 FOR CONTINUATION



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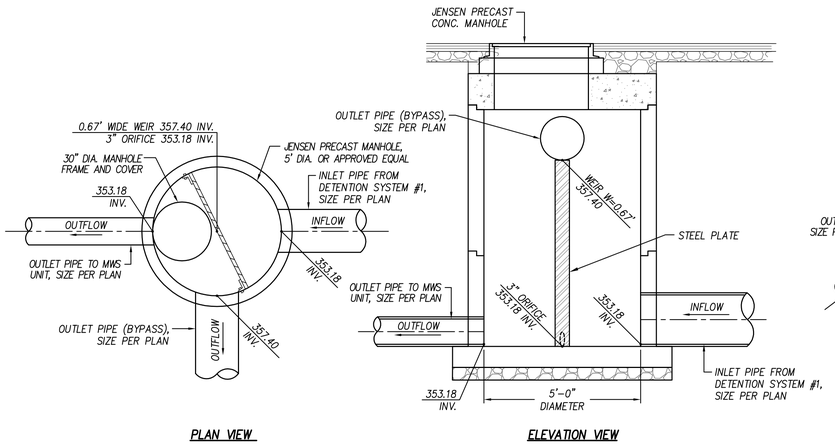
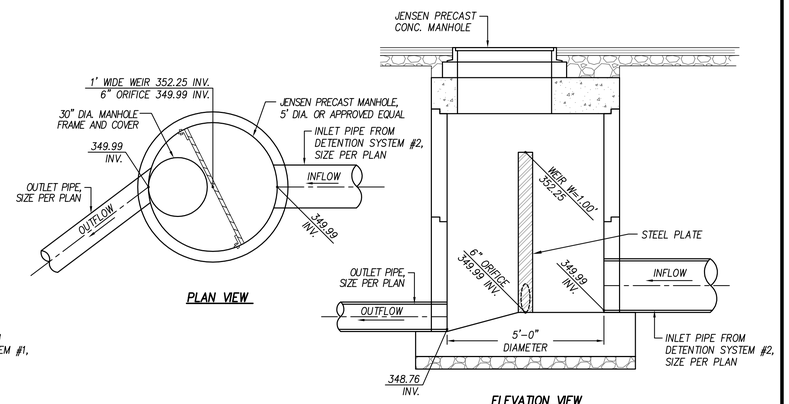


MANHOLE DOWNSTREAM OF SYSTEM #1

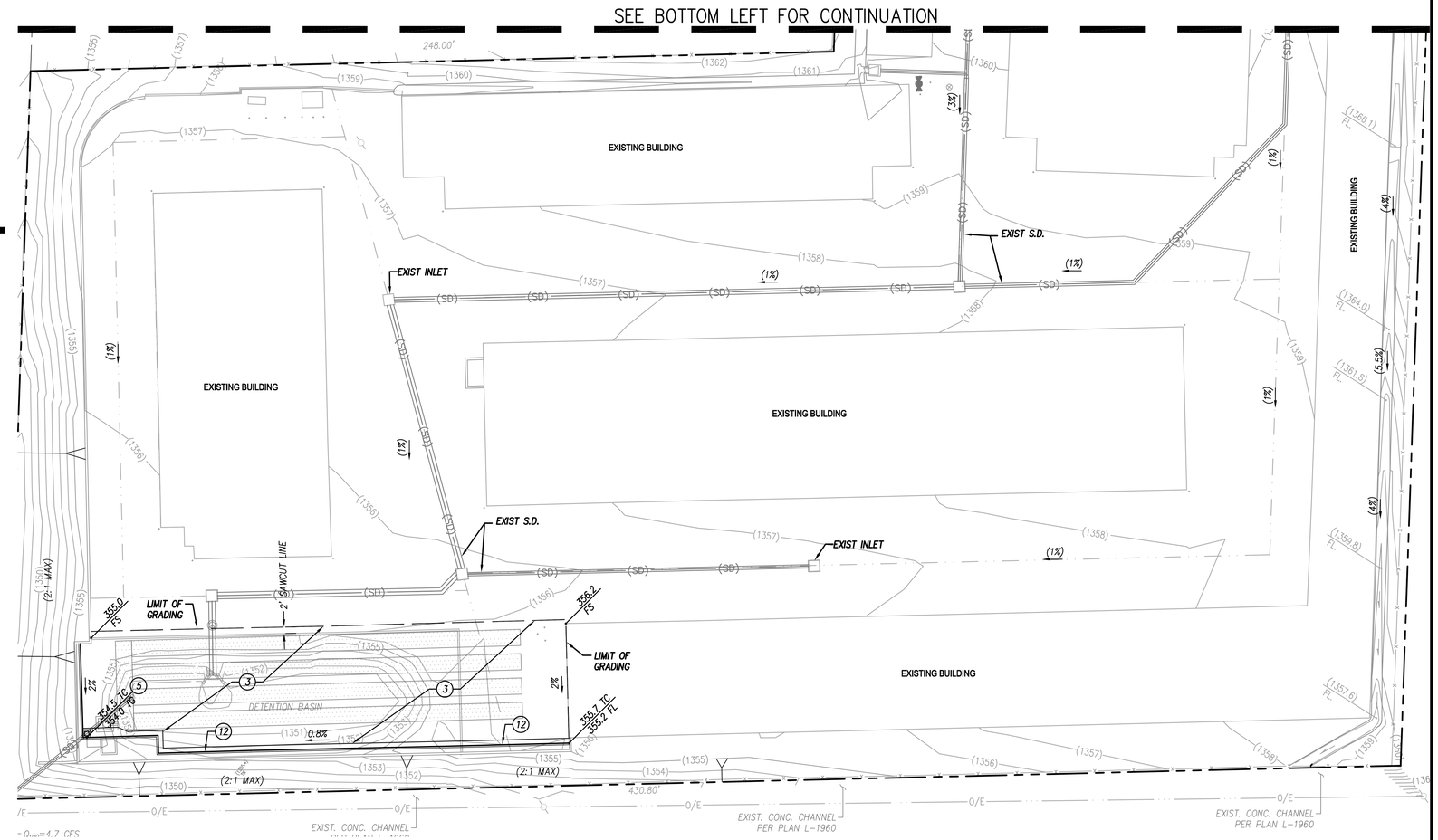
NOT TO SCALE



MANHOLE DOWNSTREAM OF SYSTEM #2

NOT TO SCALE

SEE BOTTOM LEFT FOR CONTINUATION



PRELIMINARY CONSTRUCTION NOTES

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2. CONSTRUCT 36" CONCRETE GUTTER
3. CONSTRUCT AC/AB
4. CONSTRUCT ADA RAMP
5. CONSTRUCT GRATE INLET
6. CONSTRUCT DRIVEWAY W=20' PER SAN DIEGO REGIONAL S
7. TRASH ENCLOSURE PER SEPARATE ARCH PLANS
8. TRANSFORMER PER SEPARATE ELECTRICAL PLANS
9. ACCESS GATE PER SEPARATE ARCH PLANS
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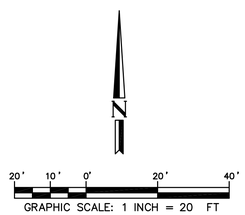

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714-685-6860
DATE
R.C.E. 39478
GREGORY R. COOKE

NOT FOR CONSTRUCTION

NO.:	REVISION:	DATE:

PROJECT: **GS VALLEY EXPANSION**
24835 LIZARD ROCKS ROAD
VALLEY CENTER, CA 92082

DRAWING NAME: **PRELIMINARY GRADING PLAN**

ISSUE:	CONCEPTUAL
DATE:	05/25/2021
CHECKED: GRC	DRAWN: MS
DRAWING FILE: 19132CG	
PROJECT NO.: 19-132	
SHEET NUMBER: 3 OF 6 SHEETS	
SCALE: AS SHOWN	

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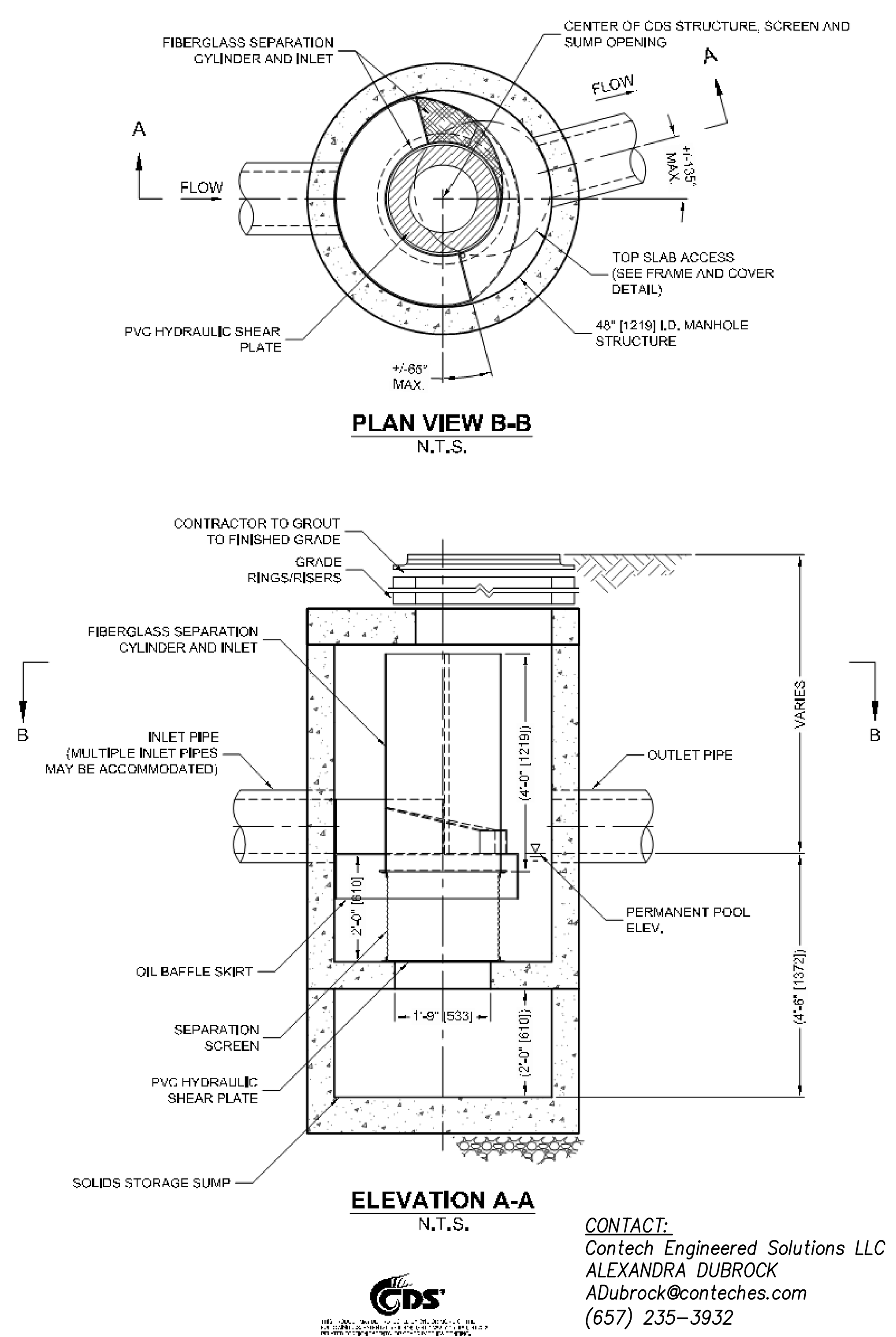
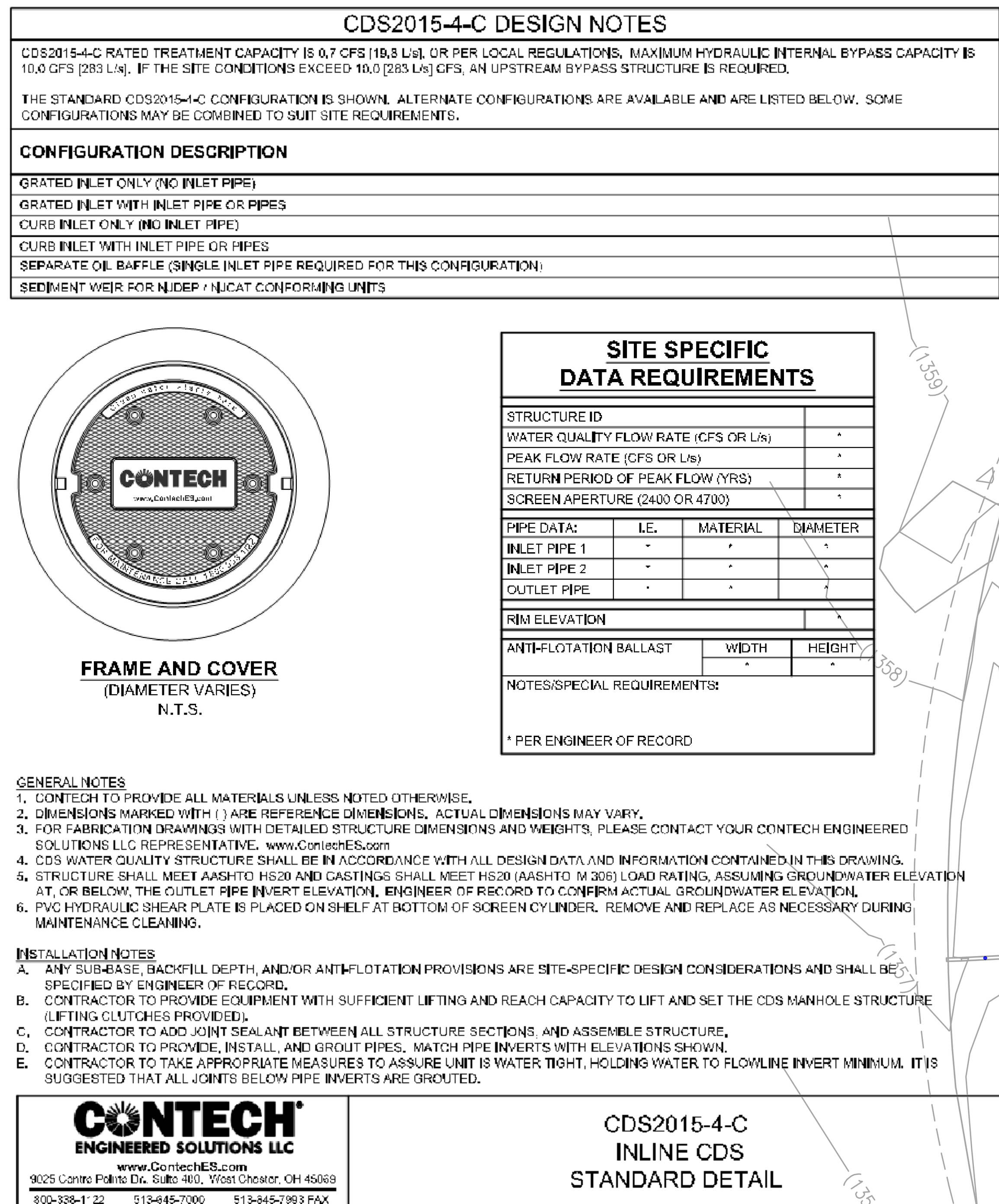
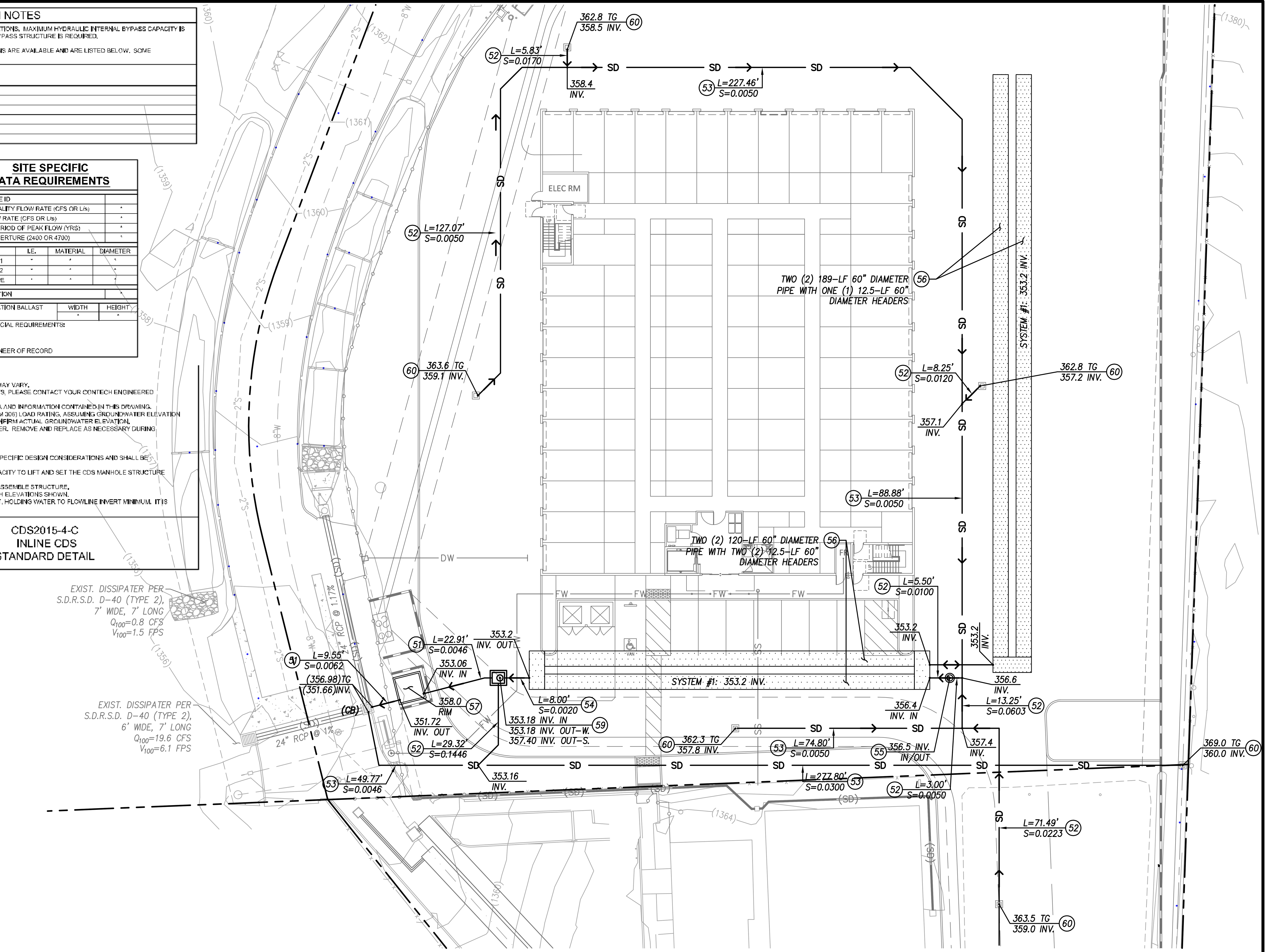
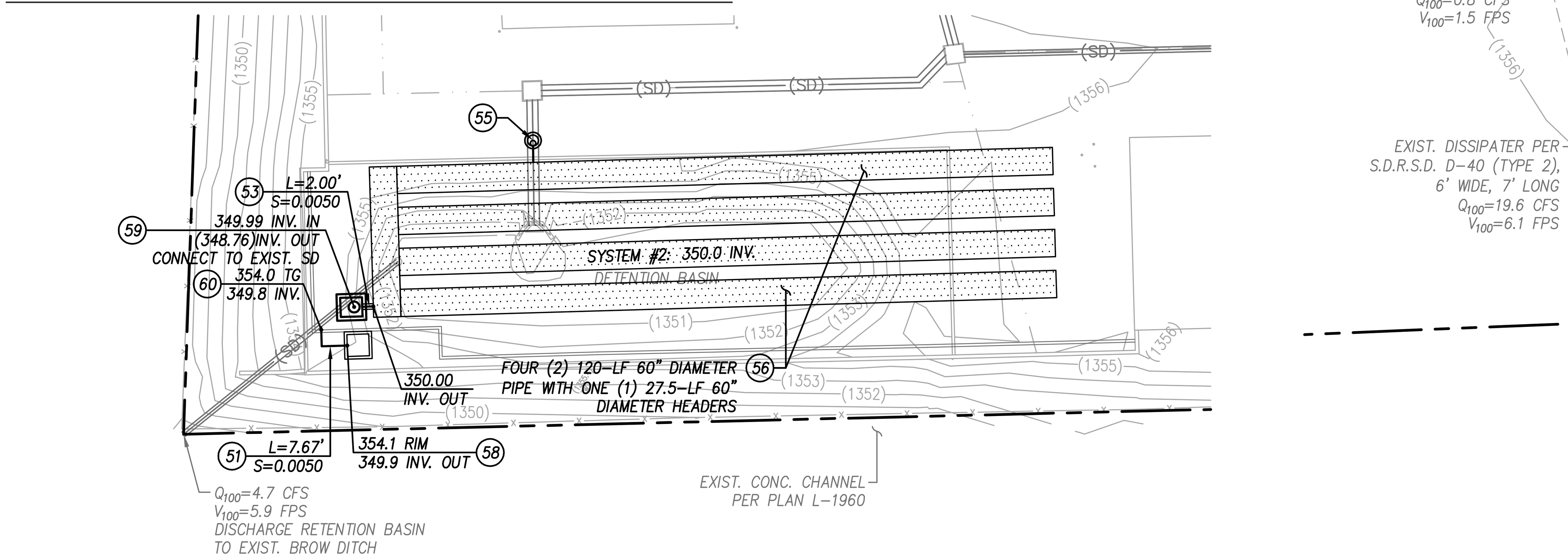


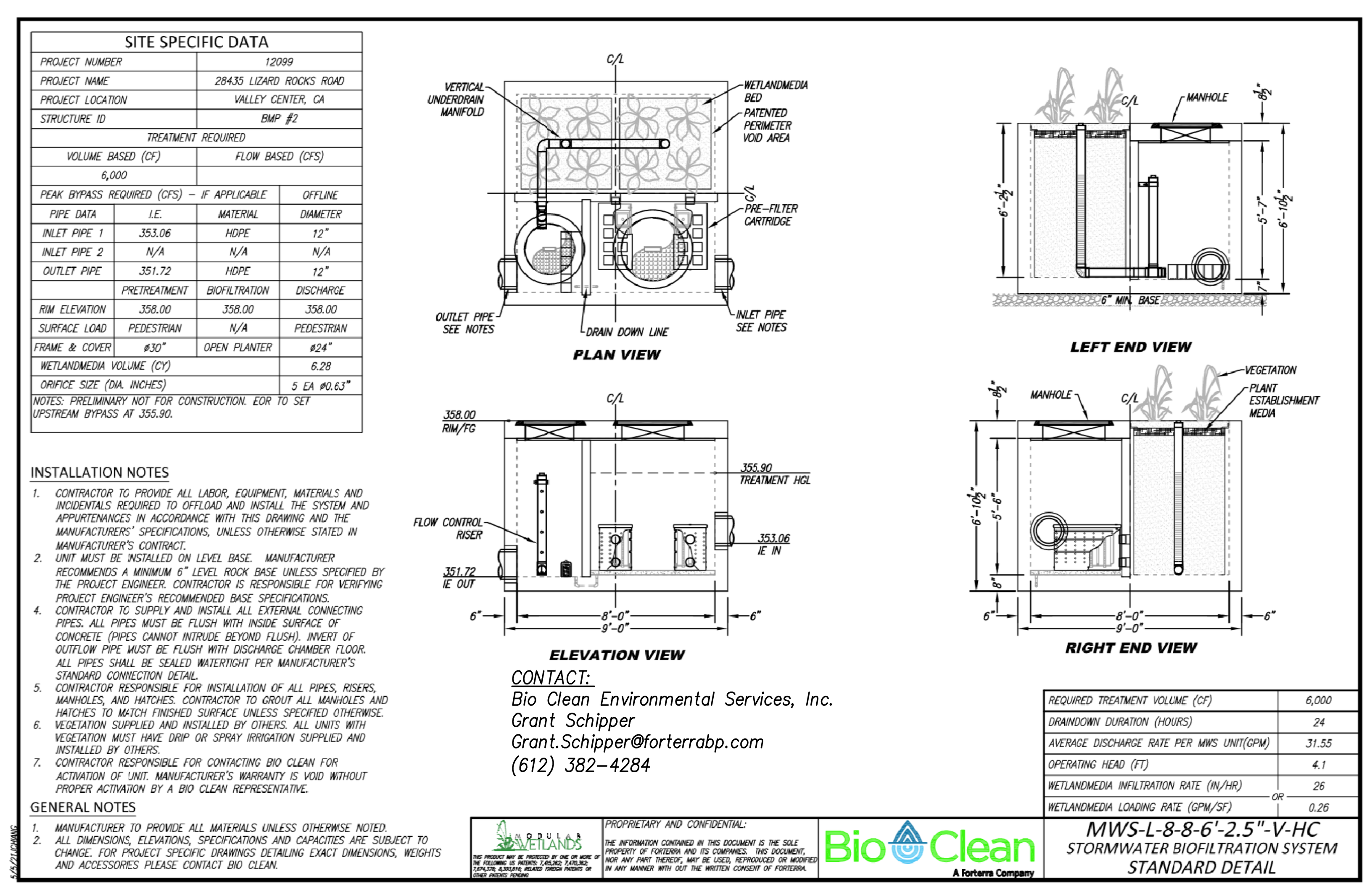


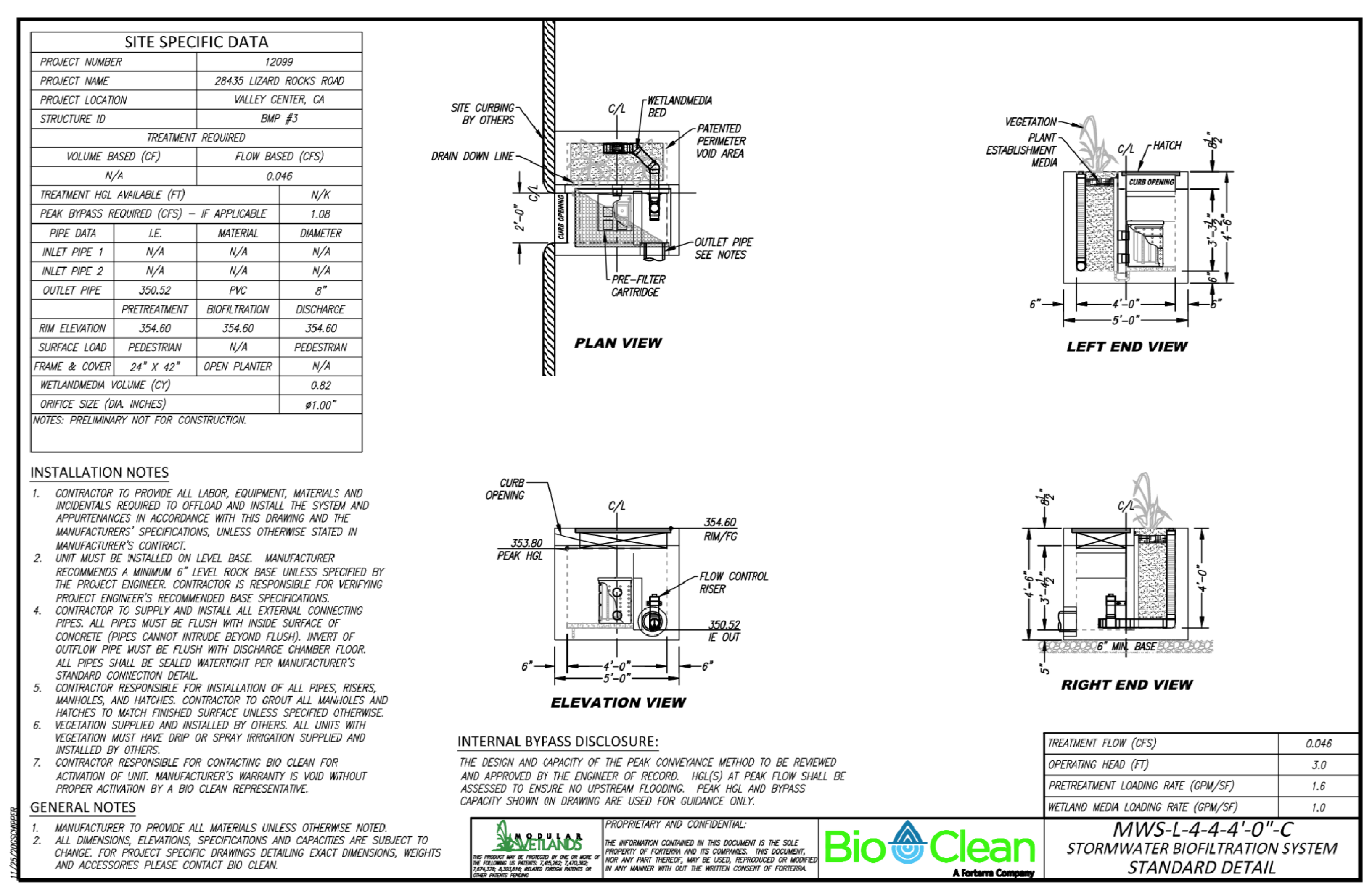




DETAIL FOR STORM DRAIN SYSTEM AT SOUTHWEST CORNER OF THE SITE

SCALE: 1"=20'



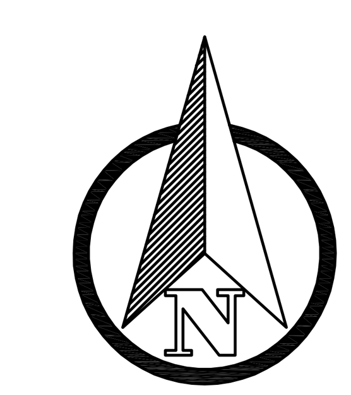


STORM DRAIN CONSTRUCTION NOTES:

(51) CONSTRUCT 8" PVC STORM DRAIN
(52) CONSTRUCT 12" PVC STORM DRAIN
(53) CONSTRUCT 18" HDPE STORM DRAIN
(54) CONSTRUCT 24" HDPE STORM DRAIN
(55) INSTALL CONTECH CDS UNIT, CDS2015-4-C, FOR TREATMENT WITH OVERFLOW BYPASS
(56) INSTALL CONTECH CMP DETENTION SYSTEM
(57) INSTALL MODULAR WETLAND SYSTEM (MWS), MWS-L-8-8-V, FOR STORMWATER TREATMENT
(58) INSTALL MODULAR WETLAND SYSTEM (MWS), MWS-L-4-4-C, FOR STORMWATER TREATMENT
(59) CONSTRUCT WEIR OUTLET STRUCTURE MANHOLE PER DETAIL ON SHEET 3
(60) CONSTRUCT 18"x18" GRATE INLET
(61) CONSTRUCT CHANNEL DRAIN

LEGEND:

←	DIRECTION OF PIPE FLOW
—SD—	PROPOSED STORM DRAIN SYSTEM
(CB)	EXISTING CATCH BASIN/DRAINAGE INLET



20' 0' 20' 40' 60'

GRAPHIC SCALE: 1"=20'

PREPARED BY:

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Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
Suite 210
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714-685-6860

GREGORY R. COOKE R.C.E. 39478 DATE

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER GREGORY R. COOKE No. 39478 Exp. 12-31-21 CIVIL STATE OF CALIFORNIA

NO.	REVISION	DATE

PROJECT: GS VALLEY EXPANSION
24835 LIZARD ROCKS ROAD
VALLEY CENTER, CA 92082

DRAWING NAME: PRELIMINARY STORM DRAIN PLAN

ISSUE:	CONCEPTUAL
DATE:	05/25/2021
CHECKED: GRC	DRAWN: MS
DRAWING FILE:	19132CG
PROJECT NO.:	19-132
SHEET NUMBER:	4
OF 6 SHEETS	
SCALE:	AS SHOWN

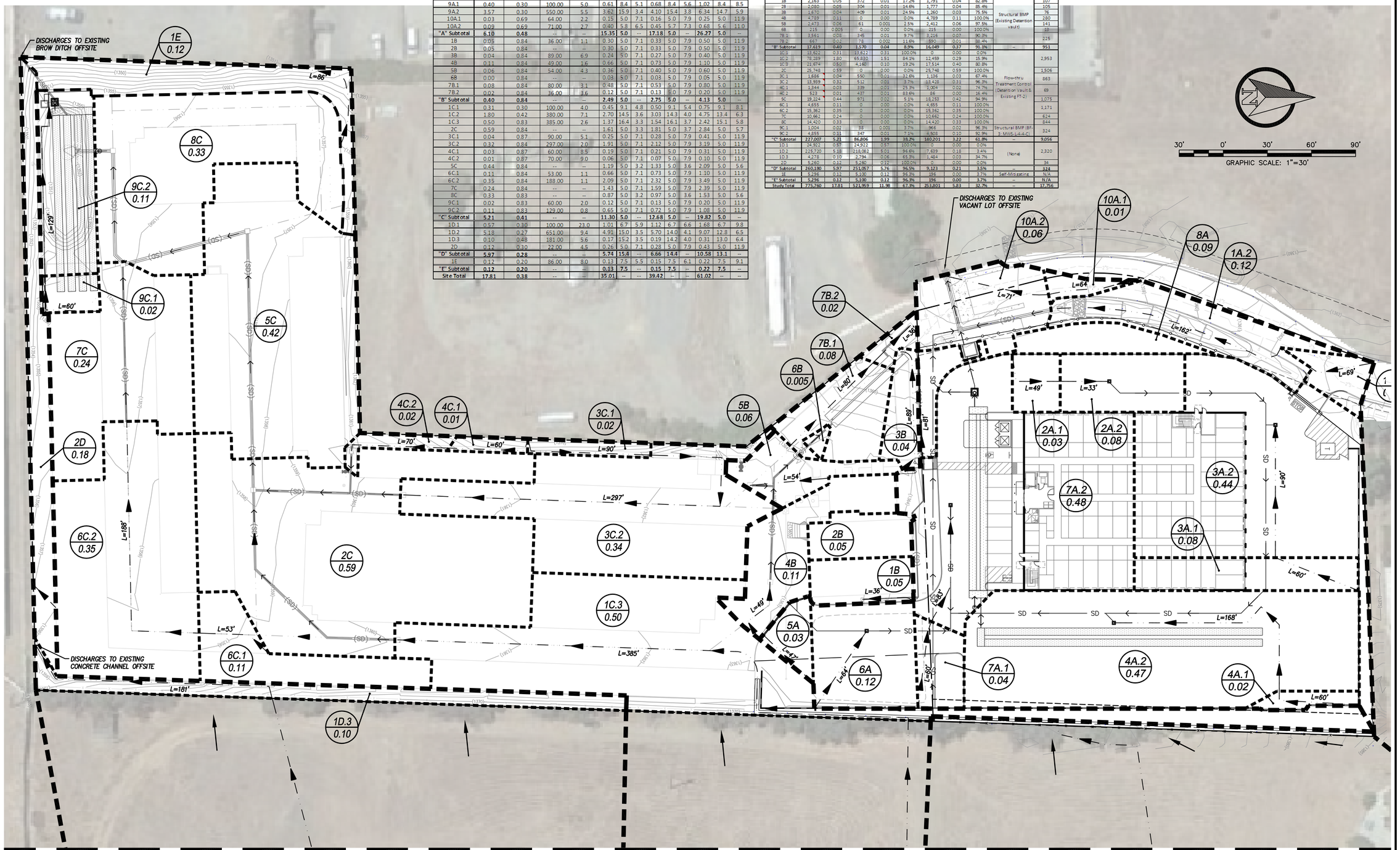
FILENAME: M:\2019\19-132 Greens Global Valley Center SD\CONCEPT\19132 C604_SD.dwg, LAST SAVED ON: May 25 2021 5:13pm PLOTTED BY: JULIE, ON: May 25 2021 6:56pm, CFG:

DRAINAGE AREA SUMMARY: DRAINAGE

DMA	Tributary Area (acres)	Runoff Coefficient, C	Flowpath, D (ft)	Slope, s (%)	Proposed Condition: 10-Year Storm Q_{10} cfs	T_{C10} min.	I_{10} in/hr	25-Year Storm Q_{25} cfs	Tc_{25} min.	I_{25} in/hr	100-Year Storm Q_{100} cfs	T_{C100} min.	I_{100} in/hr
1A1	0.03	0.69	69.00	2.8	0.15	5.0	7.1	0.16	5.0	7.9	0.25	5.0	11.9
1A2	0.12	0.69	162.00	3.9	0.41	8.8	5.0	0.47	8.2	5.7	0.71	8.3	8.5
2A1	0.03	0.84	49.00	1.0	0.18	5.0	7.1	0.20	5.0	7.9	0.30	5.0	11.9
2A2	0.08	0.84	33.00	0.6	0.48	5.0	7.1	0.53	5.0	7.9	0.80	5.0	11.9
3A1	0.08	0.84	60.00	2.0	0.48	5.0	7.1	0.53	5.0	7.9	0.80	5.0	11.9
3A2	0.44	0.84	90.00	0.6	2.63	5.0	7.1	2.92	5.0	7.9	4.38	5.0	11.9
4A1	0.02	0.84	60.00	1.5	0.12	5.0	7.1	0.13	5.0	7.9	0.20	5.0	11.9
4A2	0.47	0.84	168.00	0.5	2.79	5.0	7.1	3.12	5.0	7.9	4.68	5.0	11.9
5A	0.03	0.84	47.00	2.8	0.18	5.0	7.1	0.20	5.0	7.9	0.30	5.0	11.9
6A	0.12	0.84	64.00	1.6	0.72	5.0	7.1	0.80	5.0	7.9	1.20	5.0	11.9
7A1	0.04	0.84	60.00	2.0	0.24	5.0	7.1	0.27	5.0	7.9	0.40	5.0	11.9
7A2	0.48	0.84	83.00	1.2	3.11	5.0	7.1	3.19	5.0	7.9	4.78	5.0	11.9
8A	0.08	0.69	81.00	6.9	0.39	5.0	7.1	0.44	5.0	7.9	0.65	5.0	11.9
9A1	0.40	0.30	100.00	5.0	0.61	8.4	5.1	0.68	8.4	5.6	1.02	8.4	8.5
9A2	3.57	0.30	550.00	5.5	3.62	15.9	3.4	4.10	15.4	3.8	6.34	14.7	5.9
10A.1	0.03	0.69	64.00	2.2	0.15	5.0	7.1	0.16	5.0	7.9	0.25	5.0	11.9
10A.2	0.09	0.69	71.00	2.7	0.40	5.8	6.5	0.45	5.7	7.3	0.68	5.6	11.0
"A" Subtotal	6.10	0.48	--	--	15.35	5.0	--	17.18	5.0	--	26.27	5.0	--
1B	0.05	0.84	36.00	1.1	0.30	5.0	7.1	0.33	5.0	7.9	0.50	5.0	11.9
2B	0.05	0.84	--	--	0.30	5.0	7.1	0.33	5.0	7.9	0.50	5.0	11.9
3B	0.04	0.84	89.00	6.9	0.24	5.0	7.1	0.27	5.0	7.9	0.40	5.0	11.9
4B	0.11	0.84	49.00	1.6	0.66	5.0	7.1	0.73	5.0	7.9	1.10	5.0	11.9
5B	0.06	0.84	54.00	4.3	0.36	5.0	7.1	0.40	5.0	7.9	0.60	5.0	11.9
6B	0.00	0.84	--	--	0.00	5.0	7.1	0.00	5.0	7.9	0.00	5.0	11.9
7B.1	0.08	0.84	80.00	3.1	0.48	5.0	7.1	0.53	5.0	7.9	0.80	5.0	11.9
7B.2	0.02	0.84	36.00	3.6	0.12	5.0	7.1	0.13	5.0	7.9	0.20	5.0	11.9
"B" Subtotal	0.40	0.84	--	--	2.49	5.0	--	2.75	5.0	--	4.13	5.0	--
1C.1	0.31	0.30	100.00	4.0	0.45	9.1	4.8	0.50	9.1	5.4	0.75	9.1	8.1
1C.2	1.80	0.42	380.00	7.1	2.70	14.5	3.6	3.03	14.3	4.0	4.75	13.4	6.3
1C.3	0.50	0.83	385.00	2.6	1.37	16.4	3.3	1.54	16.1	3.7	2.42	15.1	5.8
2C	0.59	0.84	--	--	1.61	5.0	3.3	1.81	5.0	3.7	2.84	5.0	5.7
3C.1	0.04	0.87	90.00	5.1	0.25	5.0	7.1	0.28	5.0	7.9	0.41	5.0	11.9
3C.2	0.32	0.84	297.00	2.0	1.91	5.0	7.1	2.12	5.0	7.9	3.19	5.0	11.9
4C.1	0.03	0.87	60.00	8.5	0.19	5.0	7.1	0.21	5.0	7.9	0.31	5.0	11.9
4C.2	0.01	0.87	70.00	9.0	0.06	5.0	7.1	0.07	5.0	7.9	0.10	5.0	11.9
5C	0.44	0.84	--	--	1.19	5.0	3.2	1.33	5.0	3.6	2.09	5.0	5.6
6C.1	0.11	0.84	53.00	1.1	0.66	5.0	7.1	0.73	5.0	7.9	1.10	5.0	11.9
6C.2	0.35	0.84	188.00	1.1	2.09	5.0	7.1	2.32	5.0	7.9	3.49	5.0	11.9
7C	0.24	0.84	--	--	1.43	5.0	7.1	1.59	5.0	7.9	2.39	5.0	11.9
8C	0.33	0.83	--	--	0.87	5.0	3.2	0.97	5.0	3.6	1.53	5.0	5.6
9C.1	0.02	0.83	60.00	2.0	0.12	5.0	7.1	0.13	5.0	7.9	0.20	5.0	11.9
9C.2	0.11	0.83	129.00	0.8	0.65	5.0	7.1	0.72	5.0	7.9	1.08	5.0	11.9
"C" Subtotal	5.21	0.41	--	--	11.30	5.0	--	12.68	5.0	--	19.82	5.0	--
1D.1	0.57	0.30	100.00	23.0	1.01	6.7	5.9	1.12	6.7	6.6	1.68	6.7	9.8
1D.2	5.18	0.27	651.00	9.4	4.91	15.0	3.5	5.70	14.0	4.1	9.07	12.8	6.5
1D.3	0.10	0.48	181.00	5.6	0.17	15.2	3.5	0.19	14.2	4.0	0.31	13.0	6.4
2D	0.12	0.30	22.00	4.5	0.26	5.0	7.1	0.28	5.0	7.9	0.43	5.0	11.9
"D" Subtotal	5.97	0.28	--	--	5.74	15.4	--	6.66	14.4	--	10.58	13.1	--
1E	0.12	0.20	86.00	8.0	0.13	7.5	5.5	0.15	7.5	6.1	0.22	7.5	9.1
"E" Subtotal	0.12	0.20	--	--	0.13	7.5	--	0.15	7.5	--	0.22	7.5	--
Site Total	17.81	0.38	--	--	35.01	--	--	39.42	--	--	61.02	--	--

DRAINAGE AREA SUMMARY: PERVIOUS/IMPERVIOUS AREA

Drainage Subarea	Proposed Condition: Area s.f.	Area acres	Pervious Area s.f.	Pervious Area acres	Pervious Area % Site	Impervious Area s.f.	Impervious Area acres	Impervious Area %Site	BMP Type	DCV cu-ft
1A.1	1,385	0.03	79	0.00	5.7%	1,307	0.03	94.3%	Structural BMP (Existing INF-2)	0
1A.2	5,109	0.12	2,910	0.07	57.0%	2,199	0.05	43.0%		
2A.1	1,294	0.03	0	0.00	0.0%	1,294	0.03	100.0%		273
2A.2	3,370	0.08	0	0.00	0.0%	3,370	0.08	100.0%		
3A.1	3,406	0.08	0	0.00	0.0%	3,406	0.08	100.0%		1,243
3A.2	19,080	0.44	1,477	0.03	7.7%	17,614	0.40	92.3%	Structural BMP (BF-3: MWS-L-8-8-V)	
4A.1	755	0.02	0	0.00	0.0%	755	0.02	100.0%		1,247
4A.2	20,561	0.47	0	0.00	0.0%	20,561	0.47	100.0%		
5A	1,195	0.03	0	0.00	0.0%	1,195	0.03	100.0%		70
6A	5,030	0.12	0	0.00	0.0%	5,030	0.12	100.0%		294
7A.1	1,852	0.04	612	0.01	33.1%	1,239	0.03	66.9%		
7A.2	20,794	0.48	2,102	0.05	10.1%	18,693	0.43	89.9%		1,178
8A	3,367	0.08	3,367	0.077	100.0%	0	0.00	0.0%	Self-Mitigating	N/A
9A.1	17,628	0.40	17,628	0.40	100.0%	0	0.00	0.0%	(None)	2,926
9A.2	155,511	3.57	148,742	3.41	95.6%	6,769	0.16	4.4%		
10A.1	1,307	0.03	0	0.00	0.0%	1,307	0.03	100.0%	(None)	283
10A.2	4,003	0.09	530	0.01	12.7%	3,492	0.08	87.3%		
"A" Subtotal	265,658	6.10	177,426	4.07	66.8%	88,232	2.03	33.2%	--	7,425
1B	2,163	0.05	372	0.01	17.2%	1,791	0.04	82.8%		107
2B	2,080	0.05	304	0.01	14.6%	1,777	0.04	85.4%		105
3B	1,670	0.04	409	0.01	24.5%	1,260	0.03	75.5%	Structural BMP (Existing Detention vault)	76
4B	4,789	0.11	0	0.00	0.0%	4,789	0.11	100.0%		280
5B	2,473	0.06	61	0.001	2.5%	2,412	0.06	97.5%		141
6B	215	0.005	0	0.00	0.0%	215	0.00	100.0%		12
7B.1	3,561	0.08	345	0.01	9.7%	3,216	0.07	90.3%		225
7B.2	667	0.02	78	0.002	11.6%	590	0.01	88.4%		
"B" Subtotal	17,619	0.40	1,570	0.04	8.9%	16,049	0.37	91.1%	--	951
1C.1	13,622	0.31	13,622	0.31	100.0%	0	0.00	0.0%		
1C.2	78,289	1.80	65,830	1.51	84.1%	12,459	0.29	15.9%		2,953
1C.3	21,674	0.50	4,160	0.10	19.2%	17,514	0.40	80.8%		
2C	25,748	0.59	0	0.00	0.0%	25,748	0.59	100.0%		1,506
3C.1	1,686	0.04	550	0.01	32.6%	1,136	0.03	67.4%		
3C.2	13,939	0.32	512	0.01	3.7%	13,428	0.31	96.3%	Flow-thru Treatment Control (Detention Vault & Existing FT-2)	863
4C.1	1,344	0.03	339	0.01	25.3%	1,004	0.02	74.7%		69
4C.2	523	0.01	437	0.01	83.6%	86	0.00	16.4%		
5C	19,224	0.44	971	0.02	5.1%	18,253	0.42	94.9%		1,075
6C.1	4,655	0.11	0	0.00	0.0%	4,655	0.11	100.0%		1,171
6C.2	15,362	0.35	0	0.00	0.0%	15,362	0.35	100.0%		
7C	10,662	0.24	0	0.00	0.0%	10,662	0.24	100.0%		624
8C	14,420	0.33	0	0.00	0.0%	14,420	0.33	100.0%		844
9C.1	1,004	0.02	38	0.001	3.7%	966	0.02	96.3%	Structural BMP (BF-3: MWS-L-4-4-C)	324
9C.2	4,855	0.11	347	0.01	7.1%	4,508	0.10	92.9%		
"C" Subtotal	227,007	5.21	86,806	1.99	38.2%	140,201	3.22	61.8%	--	9,056
1D.1	24,922	0.57	24,922	0.57	100.0%	0	0.00	0.0%		
1D.2	225,720	5.18	218,082	5.01	96.6%	7,639	0.18	3.4%	(None)	2,320
1D.3	4,278	0.10	2,794	0.06	65.3%	1,484	0.03	34.7%		
2D	5,260	0.12	5,260	0.12	100.0%	0	0.00	0.0%		34
"D" Subtotal	260,180	5.97	251,057	5.76	96.5%	9,123	0.21	3.5%	--	324
1E	5,296	0.12	5,100	0.12	96.3%	196	0.00	3.7%	Self-Mitigating	N/A
"E" Subtotal	5,296	0.12	5,100	0.12	96.3%	196	0.00	3.7%	N/A	N/A
Study Total	775,760	17.81	521,959	11.98	67.3%	253,801	5.83	32.7%	--	17,756



SEE SHEET 6 FOR CONTINUATION

LEGEND:

- DRAINAGE STUDY AREA BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- LONGEST FLOW PATH
- DIRECTION OF FLOW
- 1A / 0.11 — SUBAREA DESIGNATION / AREA (ACRES)

GRAPHIC SCALE: 1"=30'

NOT FOR CONSTRUCTION

PREPARED BY:
DRC Engineering, Inc.
160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860
Civil Engineering/Land Surveying/Land Planning
GREGORY R. COOKE R.C.E. 39478 DATE

PROFESSIONAL ENGINEER GREGORY R. COOKE No. 39478 Exp. 12-31-21 CIVIL STATE OF CALIFORNIA

DATE:
NO.: REVISION:

PROJECT: GS VALLEY EXPANSION
24835 LIZARD ROCKS ROAD
VALLEY CENTER, CA 92082

DRAWING NAME: DRAINAGE AREA MAP

ISSUE:	CONCEPTUAL
DATE:	05/25/2021
CHECKED: GRC	DRAWN: MS
DRAWING FILE: 19132CG	
PROJECT NO.: 19-132	
SHEET NUMBER: 5	
OF 6 SHEETS	
SCALE: AS SHOWN	

FILENAME: M:\2019\19-132 Greens Global Valley Center SD\CONCEPTUAL\19132 CG05-06 DMA.dwg, LAST SAVED ON: May 25 2021 6:57pm PLOTTED BY: JULIE, ON: May 25 2021 7:05pm, CFG:

SEE SHEET 5 FOR CONTINUATION

1D.2
5.18

L=65'

1C.2
1.80

L=380'

9A.2
3.57

L=550'

1C.1
0.31

L=100'

9A.1
0.40

L=100'

1D.1
0.57

L=100'

LEGEND:

- DRAINAGE STUDY AREA BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- LONGEST FLOW PATH
- DIRECTION OF FLOW
- 1A / 0.11 — SUBAREA DESIGNATION / AREA (ACRES)

N

30' 0' 30' 60' 90'

GRAPHIC SCALE: 1"=30'

PREPARED BY:
GRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860
GREGORY R. COOKE
R.C.E. 39478
DATE

NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
GREGORY R. COOKE
No. 39478
Exp. 12-31-21
CIVIL
STATE OF CALIFORNIA

NO.:	REVISION:	DATE:

PROJECT:
GS VALLEY EXPANSION
24835 LIZARD ROCKS ROAD
VALLEY CENTER, CA 92082

DRAWING NAME:
DRAINAGE AREA MAP

ISSUE:	CONCEPTUAL
DATE:	05/25/2021
CHECKED: GRC	DRAWN: MS
DRAWING FILE: 19132CG	
PROJECT NO.: 19-132	
SHEET NUMBER: 6	
OF 6 SHEETS	
SCALE: AS SHOWN	

FILENAME: M:\2019\19-132 Greens Global Valley Center SD\CONCEPTV19132 CG05-06 DMA.dwg, LAST SAVED ON: May 25 2021 6:57pm PLOTTED BY: JULIE, ON: May 25 2021 7:06pm, CFG:

3.0 Cover Sheet and General Requirements

- Standard SWQMP Form Table 2 and PDP SWQMP Form Table 3 require the identification of pollutant-generating sources and associated BMPs for development projects.

- In some cases, County staff may request additional, more detailed documentation of source control BMP design details. If requested, applicants must submit a completed copy of this Source Control BMP Worksheet. This requirement can be satisfied either by submitting a copy of BMPDM Attachment E.1 (Source Control BMP Requirements) or equivalent documentation at the County's discretion.

- Submit this documentation using this cover sheet.

- Sources and BMPs must also be shown as applicable on DMA exhibits and construction plans (see Attachment 2).

4.0 Cover Sheet

- If this SWQMP implements any requirements of an earlier master SWQMP submittal, a copy of that previous submittal must be attached under cover of this sheet.

Major Stormwater Management Plan
(Major SWMP)
For
LIZARD ROCKS STORAGE
CASE NO. L-14940

Preparation Date: January 31, 2012

Record Stormwater Management Plan (SWMP)
This SWMP accepted on 10/18/12 **by the Department of Public Works conforms with the Engineer's certification and record plans.**
Reviewed on: October
Reviewed by: Jerry Moriarty
Signature: Jmoriarty

Prepared for:

CML-CA Lizard Rock LLC
700 Northwest 107th Avenue
Miami, Fl. 33172

Prepared by:

Aquaterra Engineering Inc.
1843 Campesino Place
Oceanside, CA 92054
760-439-2802

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan have been prepared under the direction of the following Registered Civil Engineer and meet the requirements of Regional Water Quality Control Board Order R9-2007-0001 and subsequent amendments.

Gary Lipska RCE 23080 Expires 12/31/13

REGISTERED PROFESSIONAL ENGINEER
GARY LIPSKA
No. 23080
CIVIL
STATE OF CALIFORNIA

1/31/12
Date

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

Project Name:	Lizard Rocks Storage
Project Location:	Valley Center, California
Permit Number (Land Development Projects):	L-14940
Work Authorization Number (**CIP only**):	
Applicant:	CML-CA Lizard Rock LLC
Applicant's Address:	700 Northwest 107th Avenue
Plan Prepared By (*Leave blank if same as applicant*):	Aquaterra Engineering Inc.
Preparer's Address:	1843 Campesino Place, Oceanside, CA
Date:	January 31, 2012

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9926) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Stages	Does the SWMP need revisions?		If YES, Provide Revision Date	County Reviewer
	YES	NO		
~~AS-BUILT~~ RECORD PLAN		X		

Instructions for a Major SWMP can be downloaded at
http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

STEP 1

PRIORITY DEVELOPMENT PROJECT DETERMINATION

TABLE 1: IS THE PROJECT IN ANY OF THESE CATEGORIES?

Yes ☐	No X	A	Housing subdivisions of 10 or more dwelling units. Examples: single-family homes, multi-family homes, condominiums, and apartments.
Yes X	No ☐	B	Commercial—greater than one acre. Any development other than heavy industry or residential. Examples: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; municipal facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities.
Yes ☐	No X	C	Heavy industry—greater than one acre. Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.).
Yes ☐	No X	D	Automotive repair shops. A facility categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.
Yes ☐	No X	E	Restaurants. Any facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirements and hydromodification requirements.
Yes ☐	No X	F	Hillside development greater than 5,000 square feet. Any development that creates 5,000 square feet of impervious surface and is located in an area with known erosive soil conditions, where the development will grade on any natural slope that is twenty-five percent or greater.
Yes ☐	No X	G	Environmentally Sensitive Areas (ESAs). All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.
Yes ☐	No X	H	Parking lots 5,000 square feet or more or with 15 or more parking spaces and potentially exposed to urban runoff.
Yes ☐	No X	I	Street, roads, highways, and freeways. Any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes ☐	No X	J	Retail Gasoline Outlets (RGOs) that are: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

To use the table, review each definition A through K. If any of the definitions match, the project is a Priority Development Project. Note some thresholds are defined by square footage of impervious area created; others by the total area of the development. Please see special requirements for previously developed sites and project exemptions on page 6 of the County SUSMP.

STEP 2
PROJECT STORMWATER QUALITY DETERMINATION

Total Project Site Area 3.96 Acres

Estimated amount of disturbed area: 3.83 Acres
WDID: 9 37C339975

Complete A through C and the calculations below to determine the amount of impervious surface on your project before and after construction.

A. Total size of project site: 172,498 ft^2

B. Total impervious area (including roof tops) before construction: 0.0 ft^2

C. Total impervious area (including roof tops) after construction: 141,304 ft^2

Calculate percent impervious before construction: B/A = 0.0%
Calculate percent impervious after construction: C/A = 81.9%

Please provide detailed descriptions regarding the following questions:

TABLE 2: PROJECT SPECIFIC STORMWATER ANALYSIS

1.	Please provide a brief description of the project.
Mini-warehouse project; the individual spaces shall be rented for private use.	
2.	Describe the current and proposed zoning and land use designation.
Current zoning is M52, no change proposed. Land Use Designation is 15 –Valley Center	
3.	Describe the pre-project and post-project topography of the project. (Show on Plan)
The preconstruction topography is vacant and divided into two drainage basins. The pre-development slopes a mild to moderate. The post-development topography shall maintain the existing drainage flow patterns and will have mild slopes	
4.	Describe the soil classification, permeability, erodibility, and depth to groundwater for LID and Treatment BMP consideration. (Show on Plan) If infiltration BMPs are proposed, a Geotechnical Engineer must certify infiltration BMPs in Attachment E.
According to the San Diego County Hydrologic Soil Group-Runoff Potential Maps the site soil is described as "Type B" with Moderate Runoff Potential.	
5.	Describe if contaminated or hazardous soils are within the project area. (Show on Plan)
No contaminated soils or hazardous soils were observed within the site limits.	
6.	Describe the existing site drainage and natural hydrologic features. (Show on Plan).
The predevelopment drainage is transported by surface flow through grasses and native vegetation.	
7.	Describe site features and conditions that constrain, or provide opportunities for stormwater control, such as LID features.
The proposed storm drainage systems will include catch basins and underground pipe transporting the waters to treatment and retention facilities	
8.	Is this project within the environmentally sensitive areas as defined on the maps in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects?*
	No
9.	Is this an emergency project? If yes, please provide a description below.
	No

CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

TABLE 3: CHANNEL& DRAINAGE ANALYSIS

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?		X		If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?				If YES go to 6.
3.	Will the project discharge to unlined channels?				If YES go to. 6.
4.	Will the project increase potential sediment load of downstream flow?				If YES go to 6.
5.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?				If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.				Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.				Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.				Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.				Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.				Continue to 11.
11.	"Hardening" natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.				Continue to 12.
12.	Provide other design principles that are comparable and equally effective.				Continue to 13.
13.	End				

TEMPORARY CONSTRUCTION BMPS

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

X Silt Fence

☐ Fiber Rolls

X Street Sweeping and Vacuuming

☐ Storm Drain Inlet Protection

X Stockpile Management

X Solid Waste Management

X Stabilized Construction Entrance/Exit

☐ Dewatering Operations

☐ Vehicle and Equipment Maintenance

X Desilting Basin

X Gravel Bag Berm

☐ Sandbag Barrier

X Material Delivery and Storage

☐ Spill Prevention and Control

X Concrete Waste Management

☐ Water Conservation Practices

X Paving and Grinding Operations

☐ Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.

EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an "exceptional threat to water quality," and therefore require Advanced Treatment Best Management Practices during the construction phase.

TABLE 4: EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

No.	CRITERIA	YES	NO	INFORMATION
1.	Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqt mdls.pdf		X	If YES, continue to 2. If NO, go to 5.
2.	Will the project disturb more than 5 acres, including all phases of the development?			If YES, continue to 3. If NO, go to 5.
3.	Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity?			If YES, continue to 4. If NO, go to 5.
4.	Will the project disturb soils with a predominance of USDA-NRCS Erosion factors k_f greater than or equal to 0.4?			If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.	X		Document for Project Files by referencing this checklist.
6.	Project poses an "exceptional threat to water quality" and is required to use Advanced Treatment BMPs.		X	Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

Exemption potentially available for projects that require advanced treatment: Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that demonstrates (to the County official's satisfaction) that advanced treatment is not required.

STEP 3 HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management plan (HMP) issues. If the project is exempt from the HMP criteria, please provide the supporting documentation in Attachment H. Please reference the full descriptions of the HMP exemptions located in Figure 1-1 of the County SUSMP.

TABLE 5: HYDROMODIFICATION DETERMINATION

	QUESTIONS	YES	NO	Information
1.	Will the project reduce the pre-project impervious area and are the unmitigated post-project outflows (outflows without detention routing) to each outlet location less as compared to the pre-project condition?		X	If NO, continue to 2. If YES, go to 7.
2.	Would the project site discharge runoff directly to an exempt receiving water, such as the Pacific Ocean, San Diego Bay, an exempt reservoir, or a tidally-influenced area?		X	If NO, continue to 3. If YES, go to 7.
3.	Would the project site discharge to a stabilized conveyance system, which has the capacity for the ultimate Q_{10}, and extends to the Pacific Ocean, San Diego Bay, a tidally-influenced area, an exempt river reach or reservoir?		X	If NO, continue to 4. If YES, go to 7.
4.	Does the contributing watershed area to which the project discharges have an impervious area percentage greater than 70 percent?		X	If NO, continue to 5. If YES, go to 7.
5.	Is this an urban infill project which discharges to an existing hardened or rehabilitated conveyance system that extends beyond the "domain of analysis," where the potential for cumulative impacts in the watershed are low, and the ultimate receiving channel has a "Low" susceptibility to erosion as defined in the SCCWRP channel assessment tool?		X	If NO, continue to 6. If YES, go to 7.
6.	Project is required to manage hydromodification impacts.			Reference Appendix G "Hydromodification Management Plan" of the County SUSMP.
7.	Project is not required to manage hydromodification impacts.		X**	Hydromodification Exempt. Keep on file.

**** The project has been partially constructed under a Grading Permit which was terminated. The current application is to reactivate the previous permit.**

STEP 4

POLLUTANTS OF CONCERN DETERMINATION

WATERSHED

Please check the watershed(s) for the project.

☐ San Juan 901	☐ Santa Margarita 902	X San Luis Rey 903	☐ Carlsbad 904
☐ San Dieguito 905	☐ Penasquitos 906	☐ San Diego 907	☐ Sweetwater 909
☐ Otay 910	☐ Tijuana 911	☐ Whitewater 719*	☐ Clark 720*
☐ West Salton 721*	☐ Anza Borrego 722*	☐ Imperial 723*	

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

*Projects located fully within these watersheds require only a Minor SWMP.

HYDROLOGIC SUB-AREA NAME AND BASIN NUMBER(S)

Basin Number	Sub-Area Name
903.16	Lower San Luis Rey- Rincon

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

SURFACE WATERS that each project discharge point proposes to discharge to.

SURFACE WATERS (river, creek, stream, etc.)	Hydrologic Unit Basin Number	Impairment(s) listed [303(d) listed waters or waters with established TMDLs]. List the impairments identified in **Table 7.**	Distance to Project
Inland surface Waters	903.16		19 miles

http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r9_06_303d_reqtmdls.pdf

GROUND WATERS

Ground Waters	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Ground Waters	903.16	X	X	X	X		X									

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

+ Excepted from Municipal ● Existing Beneficial Use ○ Potential Beneficial Use

PROJECT ANTICIPATED AND POTENTIAL POLLUTANTS

Using Table 6, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

TABLE 6: ANTICIPATED AND POTENTIAL POLLUTANTS GENERATED BY LAND USE TYPE

THE HIGHLIGHTED ROW DESCRIBES THE ANTICIPATED POLLUTANTS

	General Pollutant Categories								
PDP Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development 1 acre or greater	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft²	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

PROJECT POLLUTANTS OF CONCERN SUMMARY TABLE

Please summarize the identified project pollutants-of-concern by checking the appropriate boxes in the table below and list any surface water impairments identified. Pollutants anticipated to be generated by the project, which are also causing impairment of receiving waters, shall be considered the primary pollutants of concern. For projects where no primary pollutants of concern exist, those pollutants identified as anticipated shall be considered secondary pollutants of concern.

TABLE 7: PROJECT POLLUTANTS OF CONCERN

Pollutant Category	Anticipated (X)	Potential (P)	Surface Water Impairments
Sediments		P	SECONDARY POLLUTANTS
Nutrients		P	SECONDARY POLLUTANTS
Heavy Metals			
Organic Compounds		P	SECONDARY POLLUTANTS
Trash & Debris	X		SECONDARY POLLUTANTS
Oxygen Demanding Substances		P	SECONDARY POLLUTANTS
Oil & Grease	X		SECONDARY POLLUTANTS
Bacteria & Viruses		P	SECONDARY POLLUTANTS
Pesticides		P	SECONDARY POLLUTANTS

STEP 5

LID AND SITE DESIGN STRATEGIES

Each numbered item below is a Low Impact Development (LID) requirement of the WPO. Please check the box(s) under each number that best describes the LID BMP(s) and Site Design Strategies selected for this project. LID BMPs selected on this table will be typically represented as a self-retaining area, self-treating area, pervious pavement and greenroof, which, should be delineated in the Drainage Management Area map in Attachment C.

TABLE 8: LID AND SITE DESIGN

1. Conserve natural Areas, Soils, and Vegetation
X Preserve well draining soils (Type A or B)
☐ Preserve Significant Trees
☐ Preserve critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions
☐ Other. Description:
2. Minimize Disturbance to Natural Drainages
☐ Set-back development envelope from drainages
☐ space areas
X Other. Description: N/A (no natural drainages near project)
3. Minimize and Disconnect Impervious Surfaces (see 5)
☐ Clustered Lot Design
X Items checked in 5
☐ Other. Description:
4. Minimize Soil Compaction
☐ space areas
☐ Re-till soils compacted by construction vehicles/equipment
X Collect & re-use upper soil layers of development site containing organic materials
☐ Other. Description:
5. Drain Runoff from Impervious Surfaces to Pervious Areas
LID Street & Road Design
X Curb-cuts to landscaping
☐ Rural Swales
☐ Concave Median
☐ Cul-de-sac Landscaping Design
☐ Other. Description:

LID Parking Lot Design	
☐	Permeable Pavements
☐	Curb-cuts to landscaping
X	Other. Description: N/A Devices not used
LID Driveway, Sidewalk, Bike-path Design	
☐	Permeable Pavements
☐	Pitch pavements toward landscaping
X	Other. Description: N/A Devices not used
LID Building Design	
☐	Cisterns & Rain Barrels
☐	Downspout to swale or landscaping
☐	Vegetated Roofs
X	Other. Description: N/A (Devices not used)
LID Landscaping Design	
☐	Soil Amendments
☐	Reuse of Native Soils
X	Smart Irrigation Systems
☐	Street Trees
☐	Other. Description:
6. Minimize erosion from slopes	
X	Disturb existing slopes only when necessary
☐	Minimize cut and fill areas to reduce slope lengths
X	Incorporate retaining walls to reduce steepness of slopes or to shorten slopes
☐	Provide benches or terraces on high cut and fill slopes to reduce concentration of flows
☐	Rounding and shaping slopes to reduce concentrated flow
X	Collect concentrated flows in stabilized drains and channels
☐	Other. Description:

STEP 6

SOURCE CONTROL

Please complete the checklist on the following pages to determine Source Control BMPs. Below is instruction on how to use the checklist. (Also see instructions on page 60 of the *SUSMP)*

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies and list in Table 9.

2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your Source Control Exhibit in Attachment B.

3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs into Table 9.

4. Use the format in Table 9 below to summarize the project Source Control BMPs. Incorporate all identified Source Control BMPs in your Source Control Exhibit in Attachment B.

TABLE 9: PROJECT SOURCE CONTROL BMPS

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
A. On-site storm drain inlets	**Mark all inlets with the words "No Dumping! Flows to Bay" or similar where feasible.**	**Maintain and periodically repaint or replace inlet markings.** **Provide stormwater pollution prevention information to new site owners, lessees, or operators.**

Describe your specific Source Control BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting Source Control BMPs or substituting alternatives.

Mark all inlets with the words "No Dumping! Flows to Ocean" or Similar where feasible. There are no known conditions which would require alternate devices.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include ir Table 9 and Narrative
X **A.** On-site storm drain inlets	☐ Locations of inlets.	X Mark all inlets with the words "No Dumping! Flows to Bay" or similar where feasible.	X Maintain and periodically repain replace inlet markings. X Provide stormwater pollution prevention information to new sit owners, lessees, or operators. ☐ See applicable operational BMPs Fact Sheet SC-44, "Drainage Syst Maintenance," in the CASQA Stormwater Quality Handbooks a www.cabmphandbooks.com ☐ Include the following in lease agreements: "Tenant shall not all anyone to discharge anything to storm drains or to store or deposi materials so as to create a potenti discharge to storm drains."
☐ **B.** Interior floor drains and elevator shaft sump pumps		☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 **Potential Sources of Runoff Pollutants – List in Table 9**	2 **Permanent Controls—Show on Source Control Exhibit, Attachment B**	3 **Permanent Controls—List in Table 9 and Narrative**	4 **Operational BMPs—Include ir Table 9 and Narrative**
❑ **D1.** Need for future indoor & structural pest control		❑ Note building design features that discourage entry of pests.	❑ Provide Integrated Pest Manager information to owners, lessees, a operators.
❑ **D2.** Landscape/ Outdoor Pesticide Use Note: Should be consistent with project landscape plan (if applicable).	❑ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ❑ Show self-retaining landscape areas, if any. ❑ Show stormwater treatment facilities.	State that final landscape plans will accomplish all of the following: ❑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ❑ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ❑ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ❑ Consider using pest-resistant plants, especially adjacent to hardscape. ❑ To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	❑ Maintain landscaping using minimum or no pesticides. ❑ See applicable operational BMPs Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ❑ Provide IPM information to new owners, lessees and operators.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 **Potential Sources of Runoff Pollutants – List in Table 9**	2 **Permanent Controls—Show on Source Control Exhibit, Attachment B**	3 **Permanent Controls—List in Table 9 and Narrative**	4 **Operational BMPs—Include ir Table 9 and Narrative**
❑ **E.** Pools, spas, ponds, decorative fountains, and other water features.	❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	❑ If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	❑ See applicable operational BMPs Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQ Stormwater Quality Handbooks a www.cabmphandbooks.com
❑ **F.** Food service	❑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ❑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	❑ Describe the location and features of the designated cleaning area. ❑ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	❑

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 **Potential Sources of Runoff Pollutants – List in Table 9**	2 **Permanent Controls—Show on Source Control Exhibit, Attachment B**	3 **Permanent Controls—List in Table 9 and Narrative**	4 **Operational BMPs—Include ir Table 9 and Narrative**
❑ **G.** Refuse areas	❑ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ❑ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ❑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	❑ State how site refuse will be handled and provide supporting detail to what is shown on plans. ❑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	❑ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumpi of liquid or hazardous wastes. Po "no hazardous materials" signs. Inspect and pick up litter daily ar clean up spills immediately. Keep spill control materials available o site. See Fact Sheet SC-34, "Wast Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
❑ **H.** Industrial processes.	❑ Show process area.	❑ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	❑ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 **Potential Sources of Runoff Pollutants – List in Table 9**	2 **Permanent Controls—Show on Source Control Exhibit, Attachment B**	3 **Permanent Controls—List in Table 9 and Narrative**	4 **Operational BMPs—Include ir Table 9 and Narrative**
❑ I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	❑ Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank	❑ See the Fact Sheets SC-31, "Outd Liquid Container Storage" and S 33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks a www.cabmphandbooks.com

❑ **J. Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures tc implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations sl not be discharged to the storm dı system.** ❑ **Car dealerships and similar may rinse cars with water only.** ❑ **See Fact Sheet SC-21, "Vehicle aı Equipment Cleaning," in the CA Stormwater Quality Handbooks ı** www.cabmphandbooks.com

❑ **K. Vehicle/Equipment Repair and Maintenance**	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the SUSMP report, note that a the following restrictions apply tc the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazar materials, or rinsewater from par cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, no asphalt or ground surfaces, whetl inside or outside a building, exce in such a manner as to ensure tha any spilled fluid will be in an area secondary containment. Leaking vehicle fluids shall be contained drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containe containing vehicle fluid, unless s containers are in use or in an area secondary containment.

❑ **L. Fuel Dispensing Areas**	❑ **Fueling areas[1] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry swe the fueling area routinely.** ❑ **See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwa Quality Handbooks at www.cabmphandbooks.com**

[1] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

❑ **M. Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
❑ **N. Fire Sprinkler Test Water**		❑ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	❑ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks a www.cabmphandbooks.com**

O. Miscellaneous Drain or Wash Water ❑ Boiler drain lines ❑ Condensate drain lines ❑ Rooftop equipment ❑ Drainage sumps ❑ Roofing, gutters, and trim.		❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ❑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ❑ Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ❑ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ❑ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
❑ **P.** Plazas, sidewalks, and parking lots.			❑ Plazas, sidewalks, and parking lo shall be swept regularly to preven the accumulation of litter and del Debris from pressure washing sh be collected to prevent entry into storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer : not discharged to a storm drain.

STEP 7

LID AND TREATMENT CONTROL SELECTION

A treatment control BMP and/or LID IMP must be selected to treat the project pollutants of concern identified in Table 7 "Project Pollutants of Concern". A treatment control facility with a high or medium pollutant removal efficiency for the project's most significant pollutant of concern shall be selected. It is recommended to use the design procedure in Chapter 4 of the SUSMP to meet NPDES permit LID requirements, treatment requirements, and flow control requirements. If your project does not utilize this approach, the project will need to demonstrate compliance with LID, treatment and hydromodification flow control requirements. Review Chapter 2 "Selection of Stormwater Treatment Facilities" in the SUSMP to assist in determining the appropriate treatment facility for your project.

Will this project be utilizing the unified LID design procedure as described in Chapter 4 of the Local SUSMP? *(If yes, please document in Attachment D following the steps in Chapter 4 of the County SUSMP)*	
Yes	
If this project is not utilizing the unified LID design procedure, please describe how the alternative treatment facilities will comply with applicable LID criteria, stormwater treatment criteria, and hydromodification management criteria.	

➢ Indicate the project pollutants of concern (POCs) from Table 7 in Column 2 below.

TABLE 10: GROUPING OF POTENTIAL POLLUTANTS of Concern (POCs) by fate during stormwater treatment

Pollutant	Check Project Specific POCs	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	X	
Nutrients			X	X
Heavy Metals			X	
Organic Compounds			X	
Trash & Debris	X	X		
Oxygen Demanding			X	
Bacteria			X	
Oil & Grease			X	
Pesticides			X	

➢ Indicate the treatment facility(s) chosen for this project in the following table.

TABLE 11: GROUPS OF POLLUTANTS and relative effectiveness of treatment facilities

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Constructed Wetlands	Infiltration Devices (LID)	Media Filters	Higher-rate biofilters	Higher-rate media filters	Trash Racks & Hydro-dynamic Devices	Vegetated Swales
Coarse Sediment and Trash	High	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low	Medium
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

➢ Please check the box(s) that best describes the Treatment Control BMP(s) and/or LID IMP selected for this project. Please check if the treatment facility is designed for water quality or hydromodification flow control.

TABLE 12: PROJECT LID AND TC-BMPS

LID and TC-BMP Type	Water Quality Treatment Only	Hydomodification Flow Control
Bioretention Facilities (LID)		
☐ Bioretention area		
☐ Flow-through Planter		
☐ Cistern with Bioretention		
Settling Basins (Dry Ponds)		
☐ Extended/dry detention basin with grass/vegetated lining		
☐ Extended/dry detention basin with impervious lining		
Infiltration Devices (LID)		
☐ Infiltration basin		
☐ Infiltration trench		
☐ Other_____		

Wet Ponds and Constructed Wetlands		
☐ Wet pond/basin (permanent pool)		
☐ Constructed wetland		
Vegetated Swales (LID[1])		
☐ Vegetated Swale		
Media Filters		
☐ Austin Sand Filter		
☐ Delaware Sand Filter		
X Catch Basin Inserts with filter media	**X**	
Higher-rate Biofilters		
☐ Tree-pit-style unit		
☐ Other_____		
Higher-rate Media Filters		
☐ Vault-based filtration unit with replaceable cartridges		
☐ Other_____		
Hydrodynamic Separator Systems		
☐ Swirl Concentrator		
☐ Cyclone Separator		
Trash Racks		
☐ Catch Basin Insert		
☐ Catch Basin Insert w/ Hydrocarbon boom		
☐ Other_____		

[1] Must be designed per SUSMP "Vegetated Swales" design criteria for water quality treatment credit (p. 65).

For design guidelines and calculations refer to Chapter 4 "Low Impact Development Design Guide" in the SUSMP. Please show all calculations and design sheets for all treatment control BMPs proposed in Attachment D.

➢ Create a Construction Plan SWMP Checklist for your project.

Instructions on how to fill out table

1. Number and list each measure or BMP you have specified in your SWMP in Columns 1 and Maintenance Category in Column 3 of the table. Leave Column 2 blank.

2. When you submit construction plans, duplicate the table (by photocopy or electronically). Now fill in Column 2, identifying the plan sheets where the BMPs are shown. List all plan sheets on which the BMP appears. **This table must be shown on the front sheet of the grading and improvement plans.**

Stormwater Treatment Control BMPs and LID BMPs			
Description / Type	Sheet	Maintenance Category	Revisions
Catch Basin Filter Inserts	3, 4+16	1 (Treatment Control)	

Underground Detention Basin (Storm Chamber- Maintenance Category 1 (for flow control only)
Open Pit Detention Basin- Maintenance Category 1 (for flow control only)

BMP's approved as part of Stormwater Management Plan (SWMP) dated 01/31/12 on file with DPW. Any changes to the above BMP's will require SWMP revision and Plan Change approvals.

- Please describe why the chosen treatment control BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a **feasibility analysis** that demonstrates utilization of a treatment control BMP with a high or medium removal efficiency ranking is infeasible.

The open detention basin and detention basin were selected to reduce the post development storm water discharge to not exceed the pre-development flows at the calculated 100 year level. Both devices provide flow control and a not intended to be treatment control devices

The catch basin inserts with filter media are manufactured to trap hydrocarbons, suspended soils and debris from the hardscape surfaces before discharging from the site limits

Please provide the sizing design calculations for each Drainage Management Area in Attachment D. Guidelines for design calculations are located in Chapter 4 of the County SUSMP. To assist in these calculations a BMP sizing calculator is available for use at the following location: http://www.projectcleanwater.org/html/wg_susmp.html

STEP 8

OPERATION AND MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project.

TABLE 13: PROJECT BMP CATEGORY

CATEGORY	SELECTED		BMP Description
	YES	NO	
First[1]	X		**Detention Basins (open pit and underground) and Catch basin filter Inserts
Second[2]		X	
Third[3]		X	
Fourth[4]		X	

** Detention Basins (open pit and underground) are for flow control only

Note:

1. A maintenance notification will be required.
2. A recorded maintenance agreement and access easement will be required.
3. The project will be required to establish or be included in a watershed specific Community Facility District (CFD) for long-term maintenance.
4. The developer would be required to dedicate the BMP (and the property on which it is located and any necessary access) to the County.

- Please list all individual LID and Treatment Control BMPs (TC-BMPs) incorporated into the project. Please ensure the "BMP Identifier" is consistent with the legend in Attachment C "Drainage Management Area Exhibit". Please attach the record plan sheets upon completion of project and amend the Major SWMP where appropriate. For each type of LID or TC-BMP provide an inspection sheet in Attachment F "Maintenance Plan".

TABLE 14: PROJECT SPECIFIC LID AND TC-BMPS

BMP Identifier*: (Identifier to match TC-BMPs on TC-BMP Table.)	Type	Record Plan Page for TC-BMP	BMP Pollutant of Concern Efficiency (H,M,L)
TC-1	Catch Basin Filter inserts		High

* For location of BMP's, see approved Record Plan dated XX/XX/XX , plan (TYPE) sheet (#)

➢ Responsible Party for Long-term Maintenance:

Identify the parties responsible for long-term maintenance of the BMPs identified above and Source Controls specified in Attachment B. Include the appropriate written agreement with the entities responsible for O&M in Attachment F. Please see Chapter 5 "Stormwater Facility Maintenance" of the County SUSMP for appropriate maintenance mechanisms.

Representative Name:
Company Name: CML-CA Lizard Rock LLC
Phone Number:
Street Address: 700 Northwest 107TH Avenue
City/State/Zip: Miami, Fl. 33172
Email Address:

➢ Funding Source:

Provide the funding source or sources for long-term operation and maintenance of each BMP identified above. Please see Chapter 5 "Stormwater Facility Maintenance" of the County SUSMP for the appropriate funding source options. By certifying the Major SWMP the applicant is certifying that the funding responsibilities have been addressed and will be transferred to future owners.

Private Funds.

ATTACHMENTS

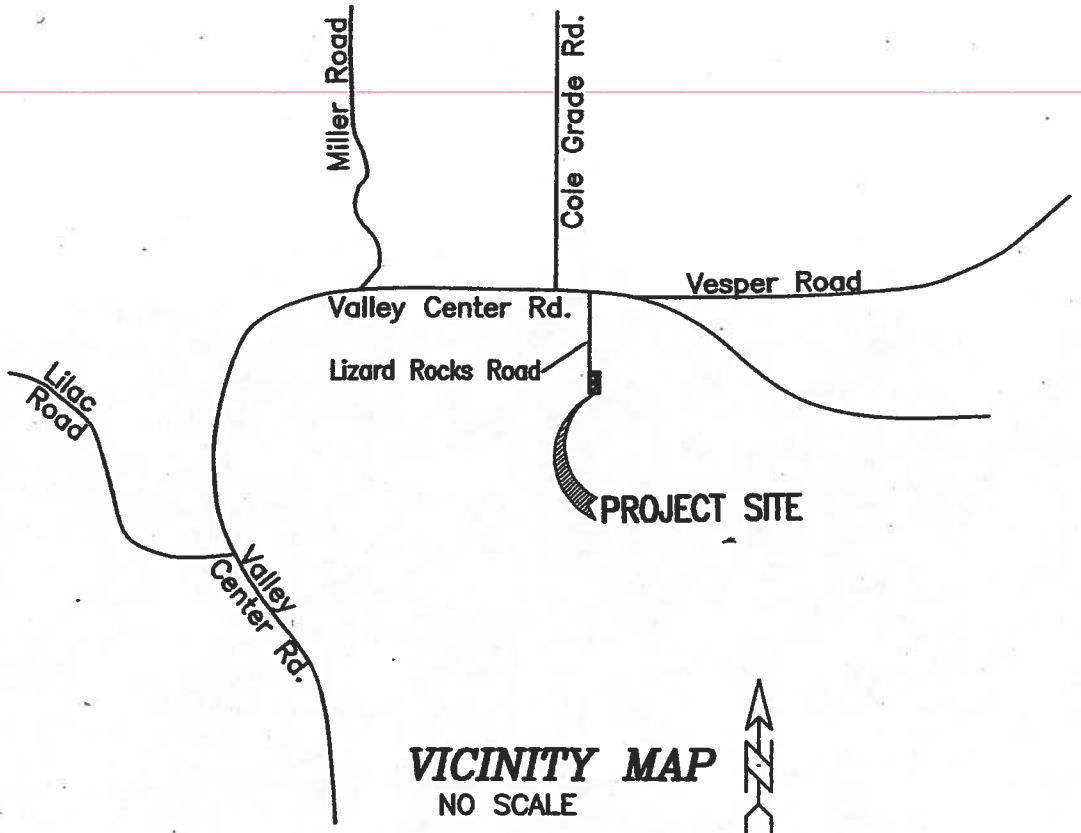
Please include the following attachments.

	ATTACHMENT	COMPLETED	N/A
A	Project Location Map	X	
B	Source Control Exhibit	X	
C	Drainage Management Area (DMA)Exhibit	X	
D	BMP Sizing Design Calculations (Water Quality and Hydromodification) and TC-BMP/IMP Design Details	X	
E	Geotechnical Certification Sheet	X	
F	Maintenance Plan	X	
G	Treatment Control BMP Certification	X	
H	HMP Exemption Documentation	X	
I	Addendum		X

Note: Attachments B and C may be combined.

ATTACHMENT A

Project Location Map



VICINITY MAP

NO SCALE

THOMAS BROS. PAGE 1090, F2

ATTACHMENT B

Source Control Exhibit

ATTACHMENT C

Drainage Management Area (DMA) Exhibit

ATTACHMENT D

Sizing Design Calculations and TC-BMP/LID Design Details

(Provide BMP Sizing Calculator results and/or continuous simulation modeling results, if applicable)

IMP TABLE BASIN A

DMA NAME	DMA AREA (S.,F)	SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X FACTOR (S.F.)
A1	55150	PAVEMENT	1.0	55150
A2	62759	BUILDING	1.0	62759
A3	19768	LANDSCAPING	0.1	1977
			TOTAL	119886

IMP TYPE	IMP NAME
CATCH BASIN INSERTS WITH FILTER MEDIA	TC1

IMP SIZING	MINIMUM AREA (S.F.)	ACTUAL AREA (S.F.)
0.04	4795	**47,920

**EQUIVALENT SURFACE AREA OF CATCH BASIN INSERT (5990 S.F./INSERT X 8 INSERTS) = 47,920 S.F.
SEE WATER QUALITY CALCULATIONS IN ATTACHMENT 'D' OF STORM WATER MANAGEMENT PLAN.

IMP TABLE BASIN B

DMA NAME	DMA AREA (S.,F)	SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X FACTOR (S.F.)
B1	11899	PAVEMENT	1.0	11899
B2	5081	BUILDING	1.0	5081
B3	12422	LANDSCAPING	0.1	1242
			TOTAL	18222

IMP TYPE	IMP NAME
CATCH BASIN INSERTS WITH FILTER MEDIA	TC1

IMP SIZING	MINIMUM AREA (S.F.)	ACTUAL AREA (S.F.)
0.04	729	**17,970

**EQUIVALENT SURFACE AREA OF CATCH BASIN INSERT (5990 S.F./INSERT X 3 INSERTS) = 17,970 S.F.
SEE WATER QUALITY CALCULATIONS IN ATTACHMENT 'D' OF STORM WATER MANAGEMENT PLAN.

Aquaterra Engineering Inc.

PROJECT Lizard Storage DATE: 1/30/12

Determine Treatment Capacity of Catch Basin Inserts

Maximum Treatment Flow Rate 0.11 cfs

Use Flow Rate Formula to Establish Equivalent Treatment Area

$Q = CiA \Rightarrow C = 1$ $i = 0.2"/hr$ $Q = 0.11$ cfs

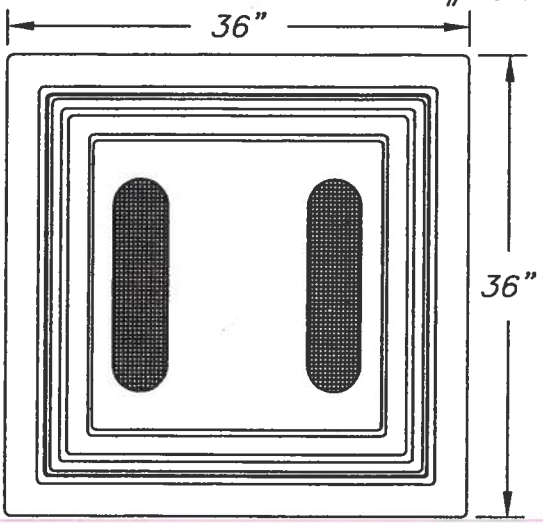
$A = \frac{Q}{Ci} = \frac{0.11}{(1)(0.2)} = 0.55$ acres $= 23,958 ft^2$

Assume 75% Clogging $\Rightarrow A = 0.25 \times 23958$

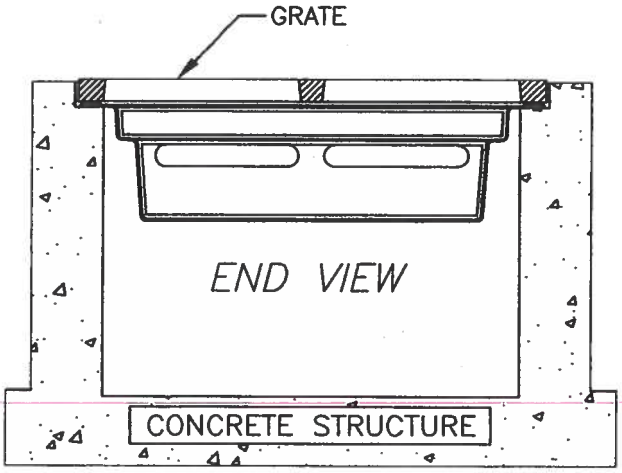
$A = 5990$ SF

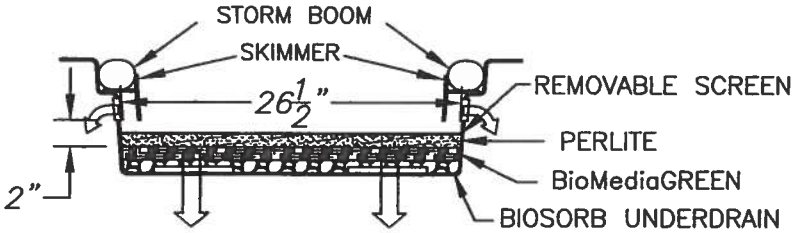
IMP Equivalent Area Per Catch Basin Insert = 5990 SF.

Part # GISB MEDIA FILTER–36–36–9



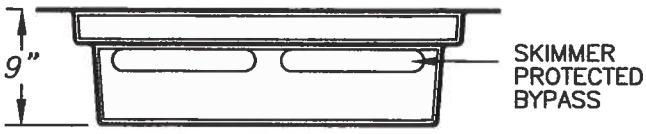
TOP VIEW





FLOW SCHEMATIC

SIDE VIEW



BOX MANUFACTURED FROM
MARINE GRADE FIBERGLASS & GEL
COATED FOR UV PROTECTION

5 YEAR MANUFACTURERS WARRANTY

PATENTED

ALL FILTER SCREENS ARE STAINLESS STEEL

NOTES:
1. ALL HARDWARE, FLANGE, AND SCREENS SHALL BE STAINLESS STEEL.
2. FILTER FRAME SHALL BE 100% MARINE GRADE FIBERGLASS WITH UV PROTECTION GEL COAT.
3. STORM BOOM SHALL BE 3" DIA. AND SHALL BE PLACED ABOVE THE BYPASS AND ORIENTATED IN A PERIMETER CONFIGURATION AROUND THE FILTER THROAT.

FLOW RATES – GISB FILTER		
TREATMENT FLOW RATE	0.11 cfs	
BYPASS FLOW RATE	4.17 cfs	ASSUMES 3.5" THICK GRATE ASSUMES 4" HEAD ABOVE GRATE
THROAT FLOW RATE	17.12 cfs	

**FLOW RATES CALCULATED USING THE FOLLOWING EQUATION

$Q = SO * c_d * A \sqrt{2 * g * h}$ c_d = COEFFICIENT of DISCHARGE = .60

BioMediaGREEN REMOVAL EFFICIENCIES	
Total Suspended Solids "Sil–Co–Sil 106"	85%
Total Phosphorus	69%
Ortho Phosophorus	41%
Dissolved Copper	79%
Dissolved Lead	98%
Dissolved Zinc	78%
Fecal Coliform Bacteria	68%
TPH	99%

SUNTREE QUALITY PRODUCTS ARE BUILT FOR EASY CLEANING AND ARE DESIGNED TO BE PERMANENT INFRASTRUCTURE AND SHOULD LAST FOR DECADES.

Email: info@biocleanenvironmental.net

BIO CLEAN ENVIRONMENTAL SERVICE
PO BOX 869 OCEANSIDE CA 92049
760–433–7640 FAX:760–433–3176

GRATE INLET SKIMMER BOX FOR INLET STRUCTURES.

DATE: 07/22/09 | SCALE:SF = 15

DRAFTER: JJC | UNITS =INCHES

PROJECT:	
REVISIONS:	DATE:
REVISIONS:	DATE:
REVISIONS:	DATE:
REVISIONS:	DATE:
REVISIONS:	DATE:

ATTACHMENT E

Geotechnical Certification Sheet

(if applicable)

The design of stormwater treatment and other control measures proposed in this plan requiring specific soil infiltration characteristics and/or geological conditions has been reviewed and approved by a registered Civil Engineer, Geotechnical Engineer, or Geologist in the State of California.

Gary Lipska RCE 23080, Expires 12/31/13

1/9/12
Date

ATTACHMENT F

Maintenance Plan

(Use Chapter 5 of the SUSMP as guidance in developing your Maintenance Plan)

I Inspection, Maintenance Log and Self-Verification Forms SEE FORMS ATTCHED AS EXHIBIT A (2 SHEETS)

II Updates, Revisions and Errata TO BE COMPLETED AS REQUIRED

III. Introduction

The proposed development and improvements will occupy about 82% the site. The site has two drainage basins. Each catch basin will be fitted with an Insert with filter media. The insert shall capture the hydrocarbons, suspended solids and debris before discharging from the site.

IV. Responsibility for Maintenance

A. General

(1) Responsible Party: CML-CA Lizard Rock LLC TEL: 760-745-3130__

(2) Maintenance Funding: PRIVATE FUNDS

B. Staff Training Program: CML-CA Lizard Rock LLC SHALL BE RESPONSIBILE FOR TRAINING

V. Summary of Drainage Areas and Stormwater Facilities

A. Drainage Areas: SEE DRAINAGE REPORTS ON FILE AT THE COUNTY OF SAN DIEGO, DEPARTMENT OF PUBLIC WORKS

B. Treatment and Flow-Control Facilities

(1) Drawings showing location and type of each facility SEE SWMP EXHIBITS

VI. Maintenance Schedule

A. Maintenance Schedule for each facility with specific requirements SEE EXHIBIT B (attached)

EXHIBIT A
1 of 2

PRIVATE TREATMENT CONTROL BMP
OPERATION AND MAINTENANCE VERIFICATION FORM
DRAINAGE INSERTS

1. Transcribe the following information from your notification letter and make corrections as necessary:

Permit No.: L-14940

BMP Location: SEE ATTACHMENT "C"

Responsible Party: CML-CA LIZARD ROCK LLC

Phone Number: (760) 754-~~3~~03130 ☐ *Check here for Phone Number Change*

Responsible Party Address: 700 NW 107TH AVE, MIAMI, FL 33172
Number Street Name & Suffix City/Zip

☐ *Check here for Address Change*

2. Using the Table below, please describe the inspections and maintenance activities that have been conducted during the last year, and date(s) maintenance was performed. Under "Results of Inspection," indicate whether maintenance was required based on each inspection, and if so, what type of maintenance. If maintenance was required, provide the date maintenance was conducted and description of the maintenance. Refer to the back of this sheet for information describing typical maintenance indicators and maintenance activities. If no maintenance was required based on the inspection results, state "no maintenance required."

Date of Inspection	Results of Inspection	Date Maintenance Completed and Description of Maintenance Conducted

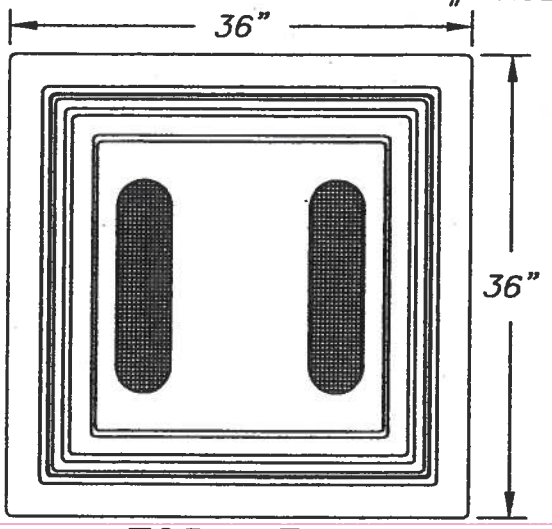
3. Attach copies of available supporting documents (photographs, copies of maintenance contracts, and/or maintenance records).

4. Sign the bottom of the form and return to:

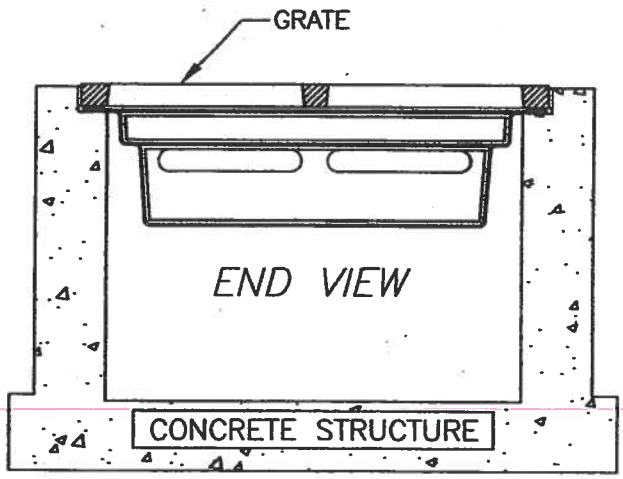
County of San Diego Watershed Protection Program
Treatment Control BMP Tracking
5201 Ruffin Road, Suite P, MS 0326
San Diego, CA 92123

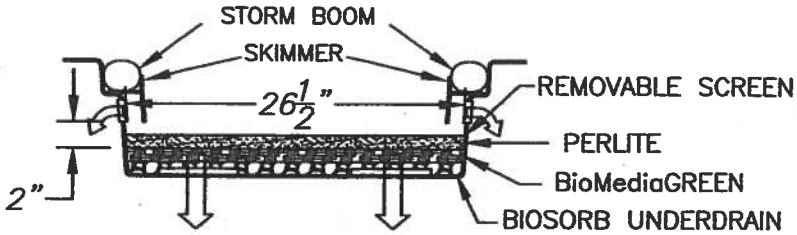
Signature of Responsible Party **Print Name** **Date**

Part # GISB MEDIA FILTER–36–36–9



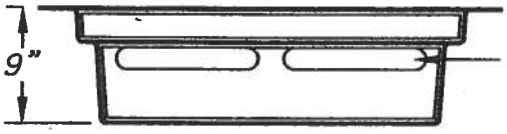
TOP VIEW





FLOW SCHEMATIC

SIDE VIEW



BOX MANUFACTURED FROM
MARINE GRADE FIBERGLASS & GEL
COATED FOR UV PROTECTION

5 YEAR MANUFACTURERS WARRANTY

PATENTED

ALL FILTER SCREENS ARE STAINLESS STEEL

NOTES:
1. ALL HARDWARE, FLANGE, AND SCREENS SHALL BE STAINLESS STEEL.
2. FILTER FRAME SHALL BE 100% MARINE GRADE FIBERGLASS WITH UV PROTECTION GEL COAT.
3. STORM BOOM SHALL BE 3" DIA. AND SHALL BE PLACED ABOVE THE BYPASS AND ORIENTATED IN A PERIMETER CONFIGURATION AROUND THE FILTER THROAT.

BioMediaGREEN REMOVAL EFFICIENCIES	
Total Suspended Solids "Sil-Co-Sil 106"	85%
Total Phosphorus	69%
Ortho Phosophorus	41%
Dissolved Copper	79%
Dissolved Lead	98%
Dissolved Zinc	78%
Fecal Coliform Bacteria	68%
TPH	99%

SUNTREE QUALITY PRODUCTS ARE BUILT FOR EASY CLEANING AND ARE DESIGNED TO BE PERMANENT INFRASTRUCTURE AND SHOULD LAST FOR DECADES.

Email: info@bioclean environmental.net

FLOW RATES – GISB FILTER

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BYPASS FLOW RATE	4.17 cfs	ASSUMES 3.5" THICK GRATE ASSUMES 4" HEAD ABOVE GRATE
THROAT FLOW RATE	17.12 cfs	

**FLOW RATES CALCULATED USING THE FOLLOWING EQUATION

$Q = 50 * c_d * A \sqrt{2 * g * h}$ $\quad c_d$ = COEFFICIENT of DISCHARGE = .60

BIO CLEAN ENVIRONMENTAL SERVICE
PO BOX 869 OCEANSIDE CA 92049
760–433–7640 FAX:760–433–3176

GRATE INLET SKIMMER BOX FOR INLET STRUCTURES.

DATE: 07/22/09	SCALE:SF = 15
DRAFTER: JJC	UNITS =INCHES

PROJECT#	
REVISIONS	DATED
REVISIONS	DATED
REVISIONS	DATED
REVISIONS	DATED
REVISIONS	DATED

BioMediaGREEN

BIO CLEAN ENVIRONMENTAL SERVICES, INC.

GISB Media Filter

Maintenance Schedule

GISB Media Filter	Cleaning Required	Est. Cleaning Time
Year 1	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 2	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 3	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 4	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 5	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 6	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 7	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 8	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 9	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Year 10	1) Vacuum Out Accumulated Debris & Sediment from GISB (3-6 Month Intervals) 2) Replace BioSorb Hydrocarbon Boom (6-12 Month Intervals) 3) Replace BioMediaGREEN + Pretreatment Filter Media (6-12 month Intervals)	18 Minutes 5 Minutes 20 minutes
Procedure 1 **Vacuum Out Accumulated Debris & Sediment from GISB**	Bio Clean Environmental Services, Inc. recommends the GISB Media Filter be inspected and cleaned every 3 to 6 months. Replacement of hydrocarbon boom, BioMediaGREEN, and pretreatment media is recommended every 6 to 12 months. The procedure is easily done with the use of any standard vacuum truck. 1) Identify catch basin. Set up traffic control if required and cone off the working area. 2) Remove grate. Visually, inspect the filter to asses loading and condition of filter components. No entry in required to clean the system. Note: entry into an underground stormwater vault such as catch basins requires certification in confined space training. If the basin is less than 4 feet are not classified as confined space (applies on in some area based upon local regulations). 3) Reach into catch basin and remove the deflector shield located on the top portion of the filter basket. The deflector shield holds the hydrocarbon boom in place and is easily removable. Removing this allows for easy access to the accumulated debris inside the basket. 4) Remove all trash, debris, organics, and sediments collected by the filter basket either manually by hand or with the use of a vacuum truck. 5) If hydrocarbon boom, pretreatment media and BioMediaGREEN are in good condition then replace the deflector shield back into filter basket. Replace grate in proper position. Service is complete. If hydrocarbon boom and/or BioMediaGREEN/pretreatment media are saturated or clogged see procedure 2 for hydrocarbon boom replacement and procedure 3 for BioMediaGREEN/pretreatment media replacement.	**18 Minutes**

Procedure 2 **Replace BioSorb Hydrocarbon Boom**	Bio Clean Environmental Services, Inc. recommends the replacement of hydrocarbon boom every 6 to 12 months. Replacement will require a new hydrocarbon boom, a pair of scissors to cut of zip ties, and new zip ties to secure boom in place. 1) Follow steps 1, 2, and 3 in procedure 1. 2) Evaluate hydrocarbon boom. If the boom is filled with hydrocarbons and oils it should be replaced. 3) To remove cut off zip ties which hold the hydrocarbon boom in place on the deflector shield. The boom lies horizontally around the perimeter of the deflector shield. Properly dispose of old boom. (The hydrocarbon boom may be classified as hazardous material and will have to be picked up and disposed of as hazardous waste). 3) Attach new boom to deflector shield with plastic zip ties through pre-drilled holes in deflector shield. Place the deflector shield back into the filter basket. 4) Refer to step 5 in procedure 1.	**5 Minutes**
Procedure 3 **Replace BioMediaGREEN + Pretreatment Filter Media**	Bio Clean Environmental Services, Inc. recommends the replacement of BioMediaGREEN and pretreatment media every 6 to 12 months. Replacement will require new blocks of BioMediaGREEN and manufacture specified pretreatment media. Quantities required can be provided by the manufacture. A serrated knife at least 10 inches long may be required to cut the BioMediaGREEN to the appropriate shape and size. The manufacture can provide the pre-cut pieces of BioMediaGREEN and pretreatment media. 1) Follow steps 1, 2, 3 and 4 in procedure 1. 2) Evaluate pretreatment media (Coconut mat and BioMediaWHITE) and BioMediaGREEN. If the media appears very dark in color or clogged it will need to be replaced. 3) To replace the filter media first vacuum out sediment and debris. The basket can be entirely removed or filter replacement can be done with filter in catch basin. All baskets are easily removable. If removing filter basket place filter basket on ground to start media replacement process. 4) Reach into basket and lift the removable screen inside the bottom of the filter basket. The removable screen holds the filter media in place. This will expose the media. 5) By hand or with a vacuum truck remove the pretreatment media. Under this is the BioMediaGREEN. Remove BioMediaGREEN filter blocks. They are tightly fitted and may require to be removed by hand. Under the BioMediaGREEN is the under drain media, Expanded Shale. This media will not need to be replaced. (The BioMediaGREEN and pretreatment media may be classified as hazardous material and will have to be picked up and disposed of as hazardous waste). 6) Use the serrated knife to cut the BioMediaGREEN filter blocks to the appropriate size. Install the new BioMediaGREEN filter blocks. The BioMediaGREEN must fit snug into the filter without large gaps. 7) Place the new pretreatment media (BioMediaWHITE first followed by coconut mat) on top of the BioMediaGREEN. Fill to a level equal to the edge of where the removable screen sets. 8) Replace removable screen and secure into place. 9) Replace filter basket back into the catch basin and secure back into position if filter basket was removed. 4) Refer to step 5 in procedure 1.	**20 Minutes**

ATTACHMENT G

Treatment Control BMP Certification for DPW Permitted Land Development Projects

County of San Diego

DEPARTMENT OF PUBLIC WORKS

Treatment Control BMP Certification for DPW Permitted Land Development Projects

Permit Number___L-14940_____ SWMP #_____

Project Name: Lizard Rock Storage

Location / Address : Lizard Rocks Road, Valley Center_____

Responsible Party for Construction Phase

Developer's Name: _CML-CA Lizard Rock LLC____

Address: _700 Northwest 107th Avenue_____

City _Miami___ State _Florida___Zip_33172___

Email Address: _____

Phone Number: _____

Engineer of Work: _Aquaterra Engineering Inc., Gary Lipska_____

Engineer's Phone Number: _760-439-2802_____

Responsible Party for Perpetual Maintenance

Owner's Name(s)*__ CML-CA Lizard Rock LLC __

Address: __700 Northwest 107th Avenue _____

City _Miami___ State _Florida___Zip_33172___

Email Address: _____

Phone Number: _____

* Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information of president at time of project closeout.

Maintenance Agreement No.: _____

Percent Impervious Before Construction: 0.0 %_____
Percent Impervious After Construction: 81.9 %_____

Proposed Disturbed Area: _3.83 Acres

Hydromodification Management:
Yes ☐ or No X

Primary or Secondary Pollutants of Concerns *(check all that apply)*

X Sediment
X Organic Compounds
X Oxygen Demanding Substances
X Bacteria and Viruses
X Nutrients
X Trash and Debris
X Oil and Grease
X Pesticides

Site Layout Strategies *(check all that apply)*

X Conserve Natural Areas
X Minimize and Disconnect Imp.Surfaces
X Minimize erosion from slopes
X Minimize Disturbance to Natural Areas
X Minimize Soil Compaction

Disperse Runoff from Impervious Surfaces to Pervious *(check all that apply)*

X Use of pervious surfaces
☐ Parking Lot Design
☐ Building Design
☐ Street and Road Design
☐ Driveway, Sidewalk, Bikepath Design
☐ Landscape Design

Source BMPs *(check all that apply)*

X Storm Drain Inlets
☐ Interior Parking Garages
☐ Landscape/Outdoor Pesticide Use
☐ Food Service
☐ Industrial Processes
☐ Vehicle and Equipment Cleaning
☐ Fuel Dispensing Areas
☐ Fire Sprinkler Test Water
☐ Plazas, sidewalks, and parking lots
☐ Interior Floor Drains
☐ Indoor & Structural Pest Control
☐ Pools, spas, etc.
☐ Refuse Areas
☐ Outdoor Storage of Equipment and Materials
☐ Vehicle/ Equipment Repair and Maintenance
☐ Loading Docks
☐ Misc. drain or wash water

Treatment Control BMPs

BMP Identifier: (Identifier to match TCBMPs on TCBMP Table.)	Type	Record Plan Page for TCBMP	BMP Pollutant of Concern Efficiency (H,M,L)
TC1	Catch Basin Insert		High

(Add sheet for all additional BMPs)
The Maintenance Agreement has been recorded. Yes ☐ or No X

I certify that the above items for this project are in substantial conformance with the approved plans. Yes X or No ☐

Please sign your name and seal. [SEAL]

Engineer's Print Name: Aquaterra Engineering Inc. Gary Lipska ___

Engineer's Signed Name: _____
RCE 23080 Expires 12/31/13

Date: _____

Submittals Required with Certification:

- Copy of the final approved SWMP.
- Copy of the approved record plan showing Stormwater TCBMP Table and the location of each verified as-built TCBMP.
- Copy of the specification sheets for the verified proprietary TCBMPs
- Recorded Maintenance Agreement (Category 1 or 2 only)
- Photograph(s) of TCBMP(s)

COUNTY - OFFICIAL USE ONLY:

For PDCI:
PDCI Inspector:_____

Date Project has/expects to close:_____

Date Certification received from EOW:_____

DPW Inspector concurs that every noted BMP on the plan and the SWMP or SWMP Addendum is installed onsite through field verification and completed as certified: Yes ☐
or No ☐

PDCI Inspector's Signed Name: _____ Date: _____

FOR WPP:
Date Received from PDCI:_____

WPP Submittal Reviewer:_____

WPP Reviewer concurs that the provided TC-BMP information is acceptable to enter into the TC-BMP Maintenance verification inventory. Yes ☐ or No ☐

WPP Reviewer's Signed Name: _____ Date:_____

ATTACHMENT H

HMP Exemption Documentation

(if applicable)

HMP Exemption Documentation

Date: January 9, 2012
By: Gary Lipska

The Lizard Rocks Storage project is not required to comply with the Hydromodification Standards because the application is to reactivate an existing Grading Permit that was termination due to inactivity.

5.0 General Requirements

- Each Priority Development Project (PDP) must provide a description of existing site conditions and proposed changes to them, including changes to topography and drainage.
- Has a **Drainage Report** has been prepared for the PDP?

  ☒ **Yes**

  - Review of the Drainage Report must be concurrent with the PDP SWQMP.
  - Include the summary page of the Drainage Report with this cover page, and provide the following information:

Title: Drainage Report
Prepared By: DRC Engineering Inc.
Date: May 27, 2021

  - Do not complete the rest of this attachment (also exclude these additional pages from your submittal). Additional documentation of site and drainage conditions is not required unless requested by County staff.

  ☐ **No** -- Complete and submit the remainder of this attachment below.

SECTION VI

Summary

Rational Method

From Figure 3-1 of the County Hydrology Manual, the following adjusted 6-hour precipitation was determined for each storm event:

- 10-year storm event = 2.7 in.
- 25-year storm event = 3.0 in.
- 100-year storm event = 4.5 in.

For each drainage management area (DMA), the runoff coefficients C, and slope (%) were determined. Although the site is classified as "limited industrial", the Runoff Coefficient, C was determined based on the percent impervious area calculated for each DMA. Based on the soil group of each DMA, the corresponding Land Use from Table 3-1 was noted for inputting into AES software.

Runoff Coefficients: Existing Condition

Subarea	Land Use Input for AES	C	Soil Group
1A.1	Natural Desert Landscaping	0.30	C
1A.2	Residential (2 DU/AC) or less	0.42	C
2A.1	Natural Desert Landscaping	0.30	C
2A.2	Natural Desert Landscaping	0.30	C
2A.3	Residential (1 DU/AC) or less	0.36	C
3A.1	Natural Desert Landscaping	0.30	C
3A.2	Residential (2 DU/AC) or less	0.42	C
1B	Residential (2.9 DU/AC) or less	0.45	C
2B	Limited Industrial	0.84	C
3B	Limited Industrial	0.84	C
4B	Limited Industrial	0.84	C
5B	Limited Industrial	0.84	C
6B	Limited Industrial	0.84	C
7B.1	Limited Industrial	0.84	C
7B.2	Limited Industrial	0.84	C
1C.1	Natural Desert Landscaping	0.30	C
1C.2	Residential (2 DU/AC) or less	0.42	C
1C.3	Limited Industrial	0.83	A
2C	Limited Industrial	0.84	C
3C.1	Artificial Desert Landscaping	0.87	C
3C.2	Limited Industrial	0.84	C
4C.1	Artificial Desert Landscaping	0.87	C
4C.2	Artificial Desert Landscaping	0.87	C
5C	Limited Industrial	0.84	C
6C.1	Limited Industrial	0.84	C
6C.2	Limited Industrial	0.84	C
7C	Limited Industrial	0.84	C
8C	Limited Industrial	0.83	A

Subarea	Land Use Input for AES	C	Soil Group
9C	Residential (2 DU/AC) or less	0.34	A
1D.1	Natural Desert Landscaping	0.30	C
1D.2	Residential (1 DU/AC) or less	0.27	A
1D.3	Residential (4.3 DU/AC) or less	0.48	C
2D	Natural Desert Landscaping	0.30	C
1E	Natural Desert Landscaping	0.20	A

Runoff Coefficients: Proposed Condition

Subarea	Land Use Input for AES	C	Soil Group
1A.1	Paved road with ditch	0.69	C
1A.2	Paved road with ditch	0.69	C
2A.1	Limited Industrial	0.84	C
2A.2	Limited Industrial	0.84	C
3A.1	Limited Industrial	0.84	C
3A.2	Limited Industrial	0.84	C
4A.1	Limited Industrial	0.84	C
4A.2	Limited Industrial	0.84	C
5A	Limited Industrial	0.84	C
6A	Limited Industrial	0.84	C
7A.1	Limited Industrial	0.84	C
7A.2	Limited Industrial	0.84	C
8A	Urban Newly Graded Areas	0.69	C
9A.1	Natural Desert Landscaping	0.30	C
9A.2	Natural Desert Landscaping	0.30	C
10A.1	Paved road with ditch	0.69	C
10A.2	Paved road with ditch	0.69	C
1B	Limited Industrial	0.84	C
2B	Limited Industrial	0.84	C
3B	Limited Industrial	0.84	C
4B	Limited Industrial	0.84	C
5B	Limited Industrial	0.84	C
6B	Limited Industrial	0.84	C
7B.1	Limited Industrial	0.84	C
7B.2	Limited Industrial	0.84	C
1C.1	Natural Desert Landscaping	0.30	C
1C.2	Residential (2DU/AC) or less	0.42	C
1C.3	Limited Industrial	0.83	A
2C	Limited Industrial	0.84	C
3C.1	Artificial Desert Landscaping	0.87	C
3C.2	Limited Industrial	0.84	C
4C.1	Artificial Desert Landscaping	0.87	C
4C.2	Artificial Desert Landscaping	0.87	C
5C	Residential (1 DU/AC) or less	0.84	C
6C.1	Limited Industrial	0.84	C
6C.2	Limited Industrial	0.84	C
7C	Residential (1 DU/AC) or less	0.84	C

Subarea	Land Use Input for AES	C	Soil Group
8C	Residential (1 DU/AC) or less	0.83	A
9C.1	Limited Industrial	0.83	A
9C.2	Limited Industrial	0.83	A
1D.1	Residential (4.3 DU/AC) or less	0.30	C
1D.2	Residential (1 DU/AC) or less	0.27	A
1D.3	Residential (4.3 DU/AC) or less	0.48	C
2D	Natural Desert Landscaping	0.30	C
1E	Natural Desert Landscaping	0.20	A

The Rational Method (Q = C x i x A) was applied with AES software to calculate the peak flow rates, Q_{10}, Q_{25}, and Q_{100}. For each DMA, the designated land use inputs listed in the tables on the previous page were inputted in order to model the correct Runoff Coefficient, C. For each DMA, the Soil Classification, total Area, A, flowpath lengths, upstream elevations, and downstream elevations were input.

AES calculates the rainfall intensity and time of concentration based on the methods described in the County Hydrology Manual.

Summary of the hydrologic analyses is tabulated on the following pages.

Existing Condition													
DMA	Tributary Area (acres)	Runoff Coefficient, C	Flowpath, D (ft)	Slope, s (%)	10-Year Storm			25-Year Storm			100-Year Storm		
					Q_{10}	Tc_{10}	i_{10}	Q_{25}	Tc_{25}	i_{25}	Q_{100}	Tc_{100}	i_{100}
					cfs	min.	in/hr	cfs	min.	in/hr	cfs	min.	in/hr
1A.1	0.13	0.30	100	13.2	0.23	6.7	5.9	0.26	6.7	6.6	0.38	6.7	9.8
1A.2	0.73	0.42	305	5.1	1.18	13.0	3.8	1.36	12.2	4.4	2.14	11.4	7.0
2A.1	0.40	0.30	100	5.0	0.61	8.4	5.1	0.68	8.4	5.6	1.02	8.4	8.5
2A.2	3.55	0.30	465	5.9	3.81	14.5	3.6	4.30	14.2	4.0	6.63	13.6	6.2
2A.3	0.41	0.36	278	5.2	0.49	16.5	3.3	0.55	16.0	3.7	0.86	15.2	5.8
3A.1	0.17	0.30	100	11.2	0.30	6.7	5.9	0.33	6.7	6.6	0.50	6.7	9.8
3A.2	0.65	0.42	294	4.4	1.15	11.3	4.2	1.24	11.8	4.5	1.98	10.7	7.2
"A" Subtotal	**6.03**	**0.33**	--	--	**6.60**	**16.6**	--	**7.48**	**16.1**	--	**11.63**	**15.3**	--
1B	0.15	0.45	95	5.7	0.41	6.4	6.1	0.46	6.4	6.7	0.68	6.4	10.1
2B	0.05	0.84	--	--	0.24	5.0	5.8	0.27	5.0	6.4	0.41	5.0	9.7
3B	0.04	0.84	89	6.9	0.24	5.0	7.1	0.27	5.0	7.9	0.40	5.0	11.9
4B	0.14	0.84	60	10.3	0.84	5.0	7.1	0.93	5.0	7.9	1.39	5.0	11.9
5B	0.06	0.84	54	4.3	0.36	5.0	7.1	0.40	5.0	7.9	0.60	5.0	11.9
6B	0.00	0.84	--	--	0.03	5.0	7.1	0.03	5.0	7.9	0.05	5.0	11.9
7B.1	0.08	0.84	80	3.1	0.48	5.0	7.1	0.53	5.0	7.9	0.80	5.0	11.9
7B.2	0.02	0.84	36	3.6	0.12	5.0	7.1	0.13	5.0	7.9	0.20	5.0	11.9
"B" Subtotal	**0.53**	**0.73**	--	--	**2.64**	**5.0**	--	**2.93**	**5.0**	--	**4.41**	**5.0**	--
1C.1	0.31	0.30	100	4.0	0.45	9.1	4.8	0.50	9.1	5.4	0.75	9.1	8.1
1C.2	1.80	0.42	380	7.1	2.70	14.5	3.6	3.03	14.3	4.0	4.75	13.4	6.3
1C.3	0.44	0.83	371	2.7	1.21	16.3	3.3	1.36	16.0	3.7	7.09	15.0	5.8
2C	0.59	0.84	--	--	1.62	5.0	3.3	1.82	5.0	3.7	2.85	5.0	5.7
3C.1	0.04	0.87	90	5.1	0.25	5.0	7.1	0.28	5.0	7.9	0.41	5.0	11.9
3C.2	0.32	0.84	297	2.0	1.91	5.0	7.1	2.12	5.0	7.9	3.19	5.0	11.9
4C.1	0.03	0.87	60	8.5	0.19	5.0	7.1	0.21	5.0	7.9	0.31	5.0	11.9
4C.2	0.01	0.87	70	9.0	0.06	5.0	7.1	0.07	5.0	7.9	0.10	5.0	11.9
5C	0.44	0.84	--	--	1.19	5.0	3.2	1.34	5.0	3.6	2.09	5.0	5.7
6C.1	0.11	0.84	53	1.1	0.66	5.0	7.1	0.73	5.0	7.9	1.10	5.0	11.9
6C.2	0.35	0.84	188	1.1	2.09	5.0	7.1	2.32	5.0	7.9	3.49	5.0	11.9
7C	0.25	0.84	--	--	1.44	5.3	6.8	1.63	5.2	7.7	2.49	5.0	11.9
8C	0.33	0.83	--	--	0.87	5.0	3.2	0.98	5.0	3.6	1.53	5.0	5.6
9C	0.13	0.34	--	--	0.14	5.0	3.2	0.16	5.0	3.6	0.25	5.0	5.6
"C" Subtotal	**5.16**	**0.65**	--	--	**10.56**	**17.5**	--	**11.85**	**17.2**	--	**18.58**	**16.1**	--
1D.1	0.57	0.30	100	23.0	1.01	6.7	5.9	1.12	6.7	6.6	1.68	6.7	9.8
1D.2	5.18	0.27	651	9.4	4.91	15.0	3.5	5.70	14.0	4.1	9.07	12.8	6.5
1D.3	0.10	0.48	181	5.6	0.17	15.2	3.5	0.19	14.2	4.0	0.31	13.0	6.4
2D	0.12	0.30	22	4.5	0.26	5.0	7.1	0.28	5.0	7.9	0.43	5.0	11.9
"D" Subtotal	**5.97**	**0.28**	--	--	**5.74**	**15.4**	--	**6.66**	**14.4**	--	**10.58**	**13.1**	--
1E	0.12	0.20	86	8.0	0.13	7.5	5.5	0.15	7.5	6.1	0.22	7.5	9.1
"E" Subtotal	**0.12**	**0.20**	--	--	**0.13**	**7.5**	--	**0.15**	**7.5**	--	**0.22**	**7.5**	---
Study Total	**17.81**	**0.42**	--	--	25.67	--	--	29.07	--	--	45.42	--	--

Proposed Condition													
DMA	Tributary Area (acres)	Runoff Coefficient, C	Flowpath, D (ft)	Slope, s (%)	10-Year Storm			25-Year Storm			100-Year Storm		
					Q_{10}	Tc_{10}	i_{10}	Q_{25}	Tc25	i_{25}	Q_{100}	Tc_{100}	i_{100}
					cfs	min.	in/hr	cfs	min.	in/hr	cfs	min.	in/hr
1A.1	0.03	0.69	69.00	2.8	0.15	5.0	7.1	0.16	5.0	7.9	0.25	5.0	11.9
1A.2	0.12	0.69	162.00	3.9	0.41	8.8	5.0	0.47	8.2	5.7	0.71	8.3	8.5
2A.1	0.03	0.84	49.00	1.0	0.18	5.0	7.1	0.20	5.0	7.9	0.30	5.0	11.9
2A.2	0.08	0.84	33.00	0.6	0.48	5.0	7.1	0.53	5.0	7.9	0.80	5.0	11.9
3A.1	0.08	0.84	60.00	2.0	0.48	5.0	7.1	0.53	5.0	7.9	0.80	5.0	11.9
3A.2	0.44	0.84	90.00	0.6	2.63	5.0	7.1	2.92	5.0	7.9	4.38	5.0	11.9
4A.1	0.02	0.84	60.00	1.5	0.12	5.0	7.1	0.13	5.0	7.9	0.20	5.0	11.9
4A.2	0.47	0.84	168.00	0.5	2.79	5.0	7.1	3.12	5.0	7.9	4.68	5.0	11.9
5A	0.03	0.84	47.00	2.8	0.18	5.0	7.1	0.20	5.0	7.9	0.30	5.0	11.9
6A	0.12	0.84	64.00	1.6	0.72	5.0	7.1	0.80	5.0	7.9	1.20	5.0	11.9
7A.1	0.04	0.84	60.00	2.0	0.24	5.0	7.1	0.27	5.0	7.9	0.40	5.0	11.9
7A.2	0.48	0.84	83.00	1.2	3.11	5.0	7.1	3.19	5.0	7.9	4.78	5.0	11.9
8A	0.08	0.69	81.00	6.9	0.39	5.0	7.1	0.44	5.0	7.9	0.65	5.0	11.9
9A.1	0.40	0.30	100.00	5.0	0.61	8.4	5.1	0.68	8.4	5.6	1.02	8.4	8.5
9A.2	3.57	0.30	550.00	5.5	3.62	15.9	3.4	4.10	15.4	3.8	6.34	14.7	5.9
10A.1	0.03	0.69	64.00	2.2	0.15	5.0	7.1	0.16	5.0	7.9	0.25	5.0	11.9
10A.2	0.09	0.69	71.00	2.7	0.40	5.8	6.5	0.45	5.7	7.3	0.68	5.6	11.0
"A" Subtotal	**6.10**	**0.48**	**--**	**--**	**15.35**	**5.0**	**--**	**17.18**	**5.0**	**--**	**26.27**	**5.0**	**--**
1B	0.05	0.84	36.00	1.1	0.30	5.0	7.1	0.33	5.0	7.9	0.50	5.0	11.9
2B	0.05	0.84	--	--	0.30	5.0	7.1	0.33	5.0	7.9	0.50	5.0	11.9
3B	0.04	0.84	89.00	6.9	0.24	5.0	7.1	0.27	5.0	7.9	0.40	5.0	11.9
4B	0.11	0.84	49.00	1.6	0.66	5.0	7.1	0.73	5.0	7.9	1.10	5.0	11.9
5B	0.06	0.84	54.00	4.3	0.36	5.0	7.1	0.40	5.0	7.9	0.60	5.0	11.9
6B	0.00	0.84	--	--	0.03	5.0	7.1	0.03	5.0	7.9	0.05	5.0	11.9
7B.1	0.08	0.84	80.00	3.1	0.48	5.0	7.1	0.53	5.0	7.9	0.80	5.0	11.9
7B.2	0.02	0.84	36.00	3.6	0.12	5.0	7.1	0.13	5.0	7.9	0.20	5.0	11.9
"B" Subtotal	**0.40**	**0.84**	**--**	**--**	**2.49**	**5.0**	**--**	**2.75**	**5.0**	**--**	**4.13**	**5.0**	**--**
1C.1	0.31	0.30	100.00	4.0	0.45	9.1	4.8	0.50	9.1	5.4	0.75	9.1	8.1
1C.2	1.80	0.42	380.00	7.1	2.70	14.5	3.6	3.03	14.3	4.0	4.75	13.4	6.3
1C.3	0.50	0.83	385.00	2.6	1.37	16.4	3.3	1.54	16.1	3.7	2.42	15.1	5.8
2C	0.59	0.84	--	--	1.61	5.0	3.3	1.81	5.0	3.7	2.84	5.0	5.7
3C.1	0.04	0.87	90.00	5.1	0.25	5.0	7.1	0.28	5.0	7.9	0.41	5.0	11.9
3C.2	0.32	0.84	297.00	2.0	1.91	5.0	7.1	2.12	5.0	7.9	3.19	5.0	11.9
4C.1	0.03	0.87	60.00	8.5	0.19	5.0	7.1	0.21	5.0	7.9	0.31	5.0	11.9
4C.2	0.01	0.87	70.00	9.0	0.06	5.0	7.1	0.07	5.0	7.9	0.10	5.0	11.9
5C	0.44	0.84	--	--	1.19	5.0	3.2	1.33	5.0	3.6	2.09	5.0	5.6
6C.1	0.11	0.84	53.00	1.1	0.66	5.0	7.1	0.73	5.0	7.9	1.10	5.0	11.9
6C.2	0.35	0.84	188.00	1.1	2.09	5.0	7.1	2.32	5.0	7.9	3.49	5.0	11.9
7C	0.24	0.84	--	--	1.43	5.0	7.1	1.59	5.0	7.9	2.39	5.0	11.9
8C	0.33	0.83	--	--	0.87	5.0	3.2	0.97	5.0	3.6	1.53	5.0	5.6
9C.1	0.02	0.83	60.00	2.0	0.12	5.0	7.1	0.13	5.0	7.9	0.20	5.0	11.9
9C.2	0.11	0.83	129.00	0.8	0.65	5.0	7.1	0.72	5.0	7.9	1.08	5.0	11.9
"C" Subtotal	**5.21**	**0.41**	**--**	**--**	**11.30**	**5.0**	**--**	**12.68**	**5.0**	**--**	**19.82**	**5.0**	**--**

1D.1	0.57	0.30	100.00	23.0	1.01	6.7	5.9	1.12	6.7	6.6	1.68	6.7	9.8
1D.2	5.18	0.27	651.00	9.4	4.91	15.0	3.5	5.70	14.0	4.1	9.07	12.8	6.5
1D.3	0.10	0.48	181.00	5.6	0.17	15.2	3.5	0.19	14.2	4.0	0.31	13.0	6.4
2D	0.12	0.30	22.00	4.5	0.26	5.0	7.1	0.28	5.0	7.9	0.43	5.0	11.9
"D" Subtotal	**5.97**	**0.28**	--	--	**5.74**	**15.4**	--	**6.66**	**14.4**	--	**10.58**	**13.1**	--
1E	0.12	0.20	86.00	8.0	0.13	7.5	5.5	0.15	7.5	6.1	0.22	7.5	9.1
"E" Subtotal	**0.12**	**0.20**	--	--	**0.13**	**7.5**	--	**0.15**	**7.5**	--	**0.22**	**7.5**	--
Site Total	**17.81**	**0.38**	--	--	**35.01**	--	--	**39.42**	--	--	**61.02**	--	--

Comparing the runoff discharged from the overall Site Total in the existing and proposed conditions without flow control, the stormwater runoff will be increased by 9.3 cfs in the 10-year storm event, 10.4 cfs in the 25-year storm event and 15.6 cfs in the 100-year storm event. The table below summarizes the change in runoff without mitigation for the overall Site Total.

	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
Existing	25.67	29.07	45.42
Proposed	35.01	39.42	61.02
Difference	9.34	10.35	15.60
Change in %	36.4%	35.6%	34.3%

Since no changes are made to either DMA-D and DMA-E, comparisons in runoff are only made for DMA-A, DMA-B and DMA-C.

	DMA-A		DMA-B		DMA-C	
	Q_{10} (cfs)	Q_{25} (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{10} (cfs)	Q_{25} (cfs)
Existing	6.60	7.48	2.64	2.93	10.56	11.85
Proposed	15.35	17.18	2.49	2.75	11.30	12.68
Difference	8.75	9.70	-0.15	-0.18	0.74	0.83

When comparing the existing versus proposed 10-year and 25-year runoff results, DMA-A has a significant increase in runoff whereas DMA-B has a slight decrease and DMA-C has a slight increase. Since discharge from DMA-A and DMA-C will be mitigated and all DMAs are tributary to the same downstream drainage system, there will be no increase in runoff from the overall site.

Underground detention systems in DMA-A and DMA-C with controlled outlets are proposed to temporarily detain stormwater runoff onsite and are designed to discharge runoff in the amount less or equal to the existing condition into the downstream drainage system.

Hydromodification/Mitigated Flow Analysis

For the 100-year storm event, Rick Engineering Company Rational Method Hydrograph software was used to generate the 100-year rational method hydrograph data for the existing and proposed Site conditions. The 100-year rational method hydrograph data and the proposed detention system data were

inputted into Civil 3D Hydraflow Hydrographs software to generate the pre-developed and mitigated flows from each underground detention system.

To mitigate the increase in runoff in DMA-A and DMA-C, a manhole with outflow control is proposed immediately downstream of both System #1 and System #2 to keep runoff discharged less than the existing condition. Both underground detention systems are sized to detain runoff generated from a 100-year storm event with discharged runoff less than the allowable Q.

Since the runoff generated from DMA-B does not increase in proposed condition, the existing underground detention system in DMA-B will remain the same.

Below are calculations to determine the allowable runoff for both underground detention systems.

- Allowable Q_{100} to discharge from proposed underground detention system (System #1) in DMA-A:

  Areas tributary to System #1: subareas 2A thru 7A

  Total runoff entering System #1 $Q_{100\text{-inflow}}$ = 16.78 cfs

  Other subareas bypass System #1 and discharges directly to POC #1.

  Drainage areas bypassing System #1: 1A.1 & 1A.2, 8A, 9A.1 & 9A.2, and 10A.1 & 10A.2

  Total runoff bypassing System #1 $Q_{100\text{-bypass}}$ = 0.88 cfs + 0.65 cfs + 7.05 cfs + 0.91 cfs = 9.49 cfs

  Existing Q_{100} discharged from DMA-A = 11.63 cfs

  Allowable runoff to discharge from System #1 $Q_{100\text{-allowable}}$ = 11.63 cfs – 9.49 cfs = 2.14 cfs

- Allowable Q_{100} to discharge from proposed underground detention system (System #2) in DMA-C:

  Areas tributary to System #2: subareas 1C thru 8C

  Total runoff entering System #2 $Q_{100\text{-inflow}}$ = 18.54 cfs

  Other subareas bypass System #2 and discharges directly to POC #2.

  Drainage areas bypassing System #2: 9C.1 & 9C.2

  Total runoff bypassing System #2 $Q_{100\text{-bypass}}$ = 1.28 cfs

  Existing Q_{100} Discharged from DMA-C = 18.58 cfs

  Allowable runoff to discharge from System #2 $Q_{100\text{-allowable}}$ = 18.58 cfs – 1.28 cfs = 17.30 cfs

The sizes of the outlet control for the two underground detention systems are summarized below:

	Size of Weir Structure	Size of Orifice Structure
System #1	0.67’ wide x 0.80’ high	3” diameter at bottom of System #1
System #2	1.00’ wide x 2.75’ high	6” diameter at bottom of System #2

With the outflow control proposed at each system, the results yielded from Hydraflow Hydrographs are shown below and shown in Appendix E.

	System #1 Outflow (cfs)	System #2 Outflow (cfs)
Mitigated	2.12	17.25

Total runoff discharged at each POC is tabulated below. Since the runoff discharged from each POC decreases, the proposed development will not have negative impact to downstream storm drain system or other flood control facilities.

	Pre-development Q_{100} (cfs)	Post-development Q_{100} (cfs)	Tributary DMA	Note for Post-development Q_{100}
POC#1	16.04	15.74	A and B	7.05 cfs from 9A.1 & 9A.2 2.44 cfs from 1A.1 & 1A.2, 8A, and 10A.1 & 10A.2 2.12 cfs from System #1 4.13 cfs from DMA-B
POC#2	18.58	18.53	C and D	17.25 cfs from System #2 1.28 cfs from 9C.1 & 9C.2

Point of Discharge (POC) Erosion

Because the stormwater runoff discharged at each POC is reduced, erosion to the existing concrete ditch and dissipater is not expected.

6.0 General Requirements

- Use this attachment to document all proposed (1) self-mitigating, (2) de minimis, and (3) self-retaining DMAs. Indicate under "DMA Compliance Option" below which design options will be used to satisfy structural performance requirements for one or more DMA.

DMA Compliance Option	Required Sub-attachments	BMPDM Design Resources
☒ **Self-mitigating**	• Sub-attachment 6.1	• BMPDM Section 5.2.1
☐ **De minimis**	• Sub-attachment 6.2	• BMPDM Section 5.2.2
☐ **Self-retaining**[1]	• Sub-attachment 6.3	• BMPDM Section 5.2.3 (all options)
SSD-BMP Type(s)		
☐ **Impervious Area Dispersion**	• Sub-attachment 6.3.1	• Fact Sheet SD-B (Appendix E.8)
☐ **Tree Wells**	• Sub-attachment 6.3.2	• Fact Sheet SD-A (Appendix E.7)

- Submit this cover page and all "Required Sub-attachments" listed for each selected DMA compliance option.
- See the BMPDM sections and appendices listed under "BMPDM Design Resources" for additional explanation of design requirements. Each constructed feature must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.

[1] If "Self-retaining" is selected, also choose the types of Significant Site Design BMPs (SSD-BMPs) to be used. SSD-BMPs are Site Design BMPs that are sized and constructed to fully satisfy all applicable Structural Performance Standards for a DMA.

6.1 Self-mitigating DMAs (complete this page once for ALL self-mitigating DMAs)

Self-mitigating DMAs consist of natural or landscaped areas that drain directly offsite or to the public storm drain system. These DMAs are excluded from DCV calculations.

- Provide the information requested below for each proposed self-mitigating DMA. Add rows or copy the table if additional entries are needed.

DMA #	*a. DMA Area (ft^2)*	*Incidental Impervious Area*		*Permit # and Sheet #*
		b. Size(ft^2)	*c. % (b/a*100)*	
8A	3,367	0	0	PDS2020-STP-03-026W1
1E	5,296	196	3.7	PDS2020-STP-03-026W1

- "DMA #", "DMA Area", and "Permit # and Sheet #" are required for all DMAs listed.
- "Incidental Impervious Area" calculations are required only where applicable (see below).
- Each self-mitigating DMA must <u>fully</u> satisfy all design requirements and restrictions described in BMPDM Section 5.2.1 and any other guidance or instruction identified by the County. Check the boxes below to confirm that all required conditions are satisfied <u>for every DMA listed</u>.

  ☒ Each DMA is hydraulically separate from other DMAs that contain permanent storm water pollutant control BMPs.

  <u>Natural and Landscaped Areas</u>

  ☒ Each DMA consists solely of natural or landscaped areas, except for incidental impervious areas (see below).

  ☒ Each area drains directly offsite or to the public storm drain system.

  ☒ Soils are undisturbed native topsoil, or disturbed soils that have been amended and aerated to promote water retention characteristics equivalent to undisturbed native topsoil.

  ☒ Vegetation is native and/or non-native/non-invasive drought tolerant species that do not require regular application of fertilizers and pesticides.

  <u>Incidental Impervious Areas (if applicable; see above)</u>

  Minor impervious areas may be permitted within the DMA if they satisfy the following criteria:

  ☒ They are not hydraulically connected to other impervious areas (unless it is a storm water conveyance system such as a brow ditch).

  ☒ They comprise less than 5% of the total DMA. Calculate the % incidental impervious area in the table above (c= b/a). DMAs are <u>not</u> self-mitigating if this area is 5% or greater.

6.2 De Minimis DMAs (complete this page once for ALL de minimis DMAs)

De minimis DMAs consist of areas too small to be considered significant contributors of pollutants and not practicable to drain to a BMP. They are excluded from DCV calculations. Examples include driveway aprons connecting to existing streets, portions of sidewalks, retaining walls, and similar features at the external boundaries of a project.

- Provide the information requested below for each proposed de minimis DMA. Add rows or copy the table if additional entries are needed.

DMA #	***DMA Area (ft^2)***	***Permit # and Sheet #***

- "DMA #", "DMA Area", and "Permit # and Sheet #" are required.
- Check the boxes below to confirm that each required condition is satisfied for ALL de minimis DMAs on the site.

  ☐ Each DMA listed is less than 250 square feet and not adjacent or hydraulically connected to each other.

  ☐ Each DMA listed <u>fully</u> satisfies all design requirements and restrictions described in BMPDM Section 5.2.2 De Minimis DMAs.

6.3 Self-retaining DMAs using Significant Site Design BMPs

Self-retaining DMAs use Site Design BMPs to fully-retain the entire DCV, at a minimum. Site Design BMPs that fully retain the DCV, at a minimum, therefore replacing the need for a Structural BMP (S-BMP), are classified as Significant Site Design BMPs (SSD-BMPs). To satisfy pollutant control requirements only, self-retaining means retention of the entire DCV. However, under some circumstances, a self-retaining DMA can also satisfy hydromodification management requirements by implementing BMPs that retain a greater volume of runoff.

- Provide the information requested below for each proposed self-retaining DMA. Add rows or copy the table if additional entries are needed.

DMA #	DMA Area (ft^2)	**BMP Type** (choose one per DMA)		*Permit # and Sheet #*
		Dispersion Area (Att. 6.3.1)	**Tree Wells (Att. 6.3.2)**	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
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		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

Copy and Paste table here for additional DMAs

- "DMA #", "DMA Area", and "Permit # and Sheet #" are required.
- Select one BMP Type per DMA. Provide detailed documentation for each DMA in Attachments 6.3.1 (Impervious Dispersion Areas) and/or 6.3.2 (Tree Wells) below.
- Each self-retaining DMA must <u>fully</u> satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, applicable BMPDM Appendix E Fact Sheets, and any other guidance or instruction identified by the County.

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[2]Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.
[3]Including the permeable pavement.

6.3.1 Self-retaining DMAs with Impervious Dispersion Areas

Impervious area dispersion (dispersion) refers to the practice of effectively disconnecting impervious areas from directly draining to the storm drain system by routing runoff from impervious areas such as rooftops (through downspout disconnection), walkways, and driveways onto the surface of adjacent pervious areas. The intent is to slow runoff discharges and reduce volumes. Dispersion with partial or full infiltration results in significant volume reduction by means of infiltration and evapotranspiration. When adequately sized, dispersion can also be used to satisfy both the pollutant control and hydromodification management structural performance standards for a DMA.

- Each self-retaining DMA with impervious area dispersion must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, Fact Sheet SD-B: Impervious Area Dispersion, and any other guidance or instruction identified by the County.
- Documentation of compliance with all applicable conditions must be submitted with this sub-attachment using the ***Summary Sheet for DMAs with Impervious Area Dispersion*** on the next page. One version of this Summary Sheet must be completed for each applicable DMA.
- Applicants are responsible to comply with all other applicable requirements, regardless of whether they are included in the summary sheet.
- The following applies if the dispersion area is **native soil** (SD-B in Appendix E):
    - For pollutant control only, the DMA is considered self-retaining if the impervious to pervious ratio is:
        - 2:1 when the pervious area is composed of Hydrologic Soil Group A
        - 1:1 when the pervious area is composed of Hydrologic Soil Group B
- The following applies if the dispersion area includes **amended soil** (SD-B in Appendix E):
    - DMAs using impervious area dispersion can be considered to meet both pollutant control and hydromodification flow control requirements if the impervious to pervious area ratio is 1:1 or less and all other design requirements of SD-B are satisfied, including 11 inches of amended soil.
- The following apply if the dispersion area is **permeable pavement** (SD-D in Appendix E):
    - For pollutant control only, a DMA is considered self-retaining if the ratio of total drainage area (including permeable pavement) to area of permeable pavement is 1.5:1 or less, and all other design requirements of SD-D are satisfied.
    - Hydromodification management performance standards can be satisfied using permeable pavement only if constructed to Structural BMP specifications. In this case, the permeable pavement must be sized and constructed in accordance with the requirements of INF-3.

[2]Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.
[3]Including the permeable pavement.

Summary Sheet for DMAs with Impervious Area Dispersion (Complete 1 sheet per DMA)

DMA #

A. Minimum Sizing Requirements

Verify that minimum standards are satisfied for the applicable dispersion area type below[2].

Native Soil (Pollutant Control Only) Select one and provide calculations below.

☐ Soil Group A: Ratio I:P is 2:1 or less ☐ Soil Group B: Ratio I:P is 1:1 or less

Impervious Area (ft²)	*Permeable Dispersion Area (ft²)*	*Ratio I:P*

Amended Soil (Pollutant Control plus Hydromodification Management)

Must satisfy both conditions and provide calculations below.

☐ Ratio I:P is 1:1 or less, AND

☐ 11 inches or more of the top of the pervious area consists of amended soils (Fact Sheet SD-F)

Impervious Area (ft²)	*Permeable Dispersion Area (ft²)*	*Ratio I:P*

Permeable Pavement (Pollutant Control Only) Provide calculations below.

☐ Ratio DMA area to area of permeable pavement is 1.5:1 or less

DMA Area[3] (ft²)	*Permeable Pavement Area (ft²)*	*Ratio DMA:Pavement*

B. Minimum Design Criteria

Check the boxes below to confirm that each design criterion has been satisfied for the DMA.

Impervious Areas:

☐ Are graded to ensure area that the full DCV drains to the dispersion area before the runoff discharges from the DMA.

Pervious Dispersion Areas:

☐ Are less than 5% slope and sheet flow over a distance of at least 10 feet from inflow to overflow route.

☐ Have inflow velocities of 3 ft/s or less OR use energy dissipation methods (e.g., riprap, level spreader) for concentrated inflows.

☐ Are densely and robustly vegetated with drought tolerant species.

☐ Consist of soil types capable of supporting or being amended to support vegetation (e.g., with sand or compost). If applicable, media amendments have been tested to verify that they are not a source of pollutants.

☐ Are owned by the project owner and will be dedicated to exclude future uses that might reduce their effectiveness.

Copy and Paste table here for additional DMAs

[2]Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.

[3]Including the permeable pavement.

6.3.2 Self-retaining DMAs with Tree Wells

Trees wells can provide a variety of benefits such as interception and increased infiltration of rainfall, reduced erosion, energy conservation, air quality improvement, and aesthetic enhancement. They can also be used to satisfy both pollutant control and hydromodification management performance standards for a DMA.

- Each self-retaining DMA with tree wells must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, Fact Sheet SD-A: Tree Wells, and any other guidance or instruction identified by the County.
- For pollutant control only, the DMA must retain the entire DCV. For hydromodification management, an additional volume must be retained in accordance with the sizing requirements presented in the DCV multiplier table in Fact Sheet SD-A.
- Documentation of compliance with applicable conditions must be submitted using the ***Summary Sheet for Self-retaining DMAs with Tree Wells*** on the next page. One version of this Summary Sheet must be completed for each applicable DMA.
- If both pollutant control and hydromodification standards apply, the soil depth of all tree wells in the DMA must be selected before determining the Required Retention Volume (RRV). Each tree well must be constructed to the selected depth. For pollutant control only, tree wells within a DMA may be constructed to different soil depths.
- In most cases tree wells must use Amended Soil per Fact Sheet SD-F. However, Structural Soil is required in some cases (e.g., placing the tree well next to a curb). See ***Structural Requirements for Confined Tree Well Soil Volume*** in Fact Sheet SD-A for additional explanation. If applicable, list the DMAs and Tree Well #s below for all tree wells requiring Structural Soil.

DMA #	**Tree Wells Requiring Structural Soil (list Tree Well #s)**

- The Design Capture Volume (DCV) must be known for each DMA in order to determine the volume to be mitigated by the tree wells. Instructions for DCV calculation are provided in BMPDM Appendix B.1. An automated version of Worksheet B.1 (Calculation of Design Capture Volume) is available at www.sandiegocounty.gov/stormwater under the Development Resources tab.

Summary Sheet for Self-retaining DMAs with Tree Wells (complete one sheet per DMA)

DMA #:	**DMA Area (ft^2):**		
Required Retention Volume (RRV)			
a. Design Capture Volume (DCV; ft^3):			
b. DCV Multiplier (Fact Sheet SD-A)			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
☐ Pollutant control only	Any	All	1.0
☐ Pollutant control plus hydromodification			
c. Required Retention Volume (ft^3) [DCV * DCV Multiplier]			

Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)

Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.

Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	

Total Credit Volume (ft3) Add the combined volumes above. Total credit volume must equal or exceed the RRV.	

Copy and Paste table here for additional DMAs

7.0 General Requirements

- Submit this cover page and all required Sub-attachments for all structural BMPs proposed for the project.
- See the BMPDM sections and appendices listed under "BMPDM Design Resources" in the table below for additional explanation of design requirements. Constructed features must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management. Completion of SWQMP Attachment 8 is also required for these BMPs.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.
- Structural BMP Certification. All structural BMPs documented this attachment and in Attachment 8 must be certified by a registered engineer in Sub-attachment 7.1.
- Structural BMP Verification. Structural BMP installation must be verified by the County at the completion of construction. Applicants must complete an Installation Verification Form (Attachment 10).

Sub-attachments (check all that are completed)	**Requirement**	**BMPDM Design Resources**
☒ **7.1: Preparer's Certification**	Required	• N/A
☒ **7.2: Structural BMP Strategy**	Required	• BMPDM Sections 5.1., 5.3, 5.4, and Chapter 6 • BMPDM Appendix E (pages E-78 through E-210)
☒ **7.3: Structural BMP Checklist(s)**	Required	
☒ **7.4: Stormwater Pollutant Control Worksheet Calculations**	Required	• BMPDM Appendix B
☒ **7.5: Identification and Narrative of Receiving Water and Pollutants of Concern**	Required if flow-thru BMPs are proposed	• N/A

7.1 Engineer of Work Certification for Structural BMPs

Project Name GS Valley Expansion
Permit Application Number PDS2020-STP-03-026W1

CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of structural storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the County of San Diego BMP Design Manual, which is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100) requirements for storm water management. I have read and understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual.

I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by County staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of structural storm water BMPs for this project, of my responsibilities for their design.

☒ In addition to the structural pollutant control BMPs described in this attachment, this certification applies to the Structural Hydromodification Management BMPs described in Attachment 8 (check if applicable).

RCE 39478 Exp. 12-31-21
Engineer of Work's Signature, PE Number & Expiration Date

Gregory Cooke
Print Name

DRC Engineering Inc
Company

5/27/21
Date

Engineer's Seal:

7.2 Structural BMP Strategy

7.2.1 Narrative Strategy (Continue description on subsequent pages as necessary)

Describe the general strategy for structural BMP implementation at the project site. For pollutant control BMPs, your description must address the key points outlined in Section 5.1 of the BMP Design Manual, and the type of BMPs selected. For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

The Project Site is divided to five main areas:

(1) Drainage Management Area "A" where a new self-storage facility is proposed plus offsite run-on area east of the project site,

(2) Drainage Management Area "B" where it's consisted of an existing office building and associated paved parking area and drive aisle,

(3) Drainage Management Area "C" where an existing self-storage facility is located,

(4) Drainage Management Area "D" includes offsite run-on area east of the site and areas to the east and south of the existing self-storage facility, and

(5) Drainage Management Area "E" where it's consisted of existing slopes between the existing self-storage facility and the property line on the east and south.

Selection and Design of the proposed Storm Water Pollutant Control BMPs was based on Section 5.1 of the County of San Diego BMP Design Manual.

The 85th percentile, 24-hour rainfall depth of 0.78" for the site is determined from the GIS file downloaded from http://www.sangis.org/download/index.html. For each drainage subarea within each DMA, the tributary area and percentage of impervious and pervious areas are determined from topography and site features. With the required fields entered in Worksheet B.1, the runoff coefficient is automatically calculated.

Due to perched groundwater at the site, infiltration is not feasible. Therefore, proprietary biofiltration in combination with underground stormwater detention system is considered for DMA-A and DMA-C since DMA-B already has an existing Storm Chamber system and catch basin inserts in place and the tributary area was reduced. DMA-D and DMA-E remain undisturbed. Filling out the required fields in Worksheet B.2 yields the required retention volume for each DMA.

For DMA-A, all impervious area located within the property lines are graded to drain towards one of the proposed inlets onsite. The inlets are connected to the proposed underground stormwater detention system via a proposed storm drain system. The volume required to be retained onsite calculated in Worksheet B.2 will be temporarily stored in the underground stormwater detention system with a manhole downstream that has a weir structure and orifice as a flow control BMP and slowly released to the proposed proprietary biofiltration BMP, Modular Wetlands System, for pollutant control prior to discharging offsite into public storm drain system located downstream. DMA-A includes 3.97 acres of offsite run-on area.

For DMA-B, pollutant control and hydromodification BMP's are not proposed because majority of DMA-B will not be disturbed and the tributary area is reduced. There are no proposed features for DMA-B and the existing drainage pattern will remain the same as previously constructed. In the existing condition, based on County of San Diego As-Built Grading Plan L-14940, there are four (4) existing traffic-grate catch basins. For pollutant control purposes, each of the existing catch basins in DMA-B have been installed with catch basin inserts with filter media that treat low flows and allow high flows to bypass into the existing underground storm drain system. The existing underground storm drain system conveys stormwater flows into an existing proprietary underground detention basin designed for flow control only. Once full, the existing underground

detention basin outlets into a discharge basin that overflows out onto the surface from an existing steel traffic grate. From there, stormwater surface flows northwest into Lizard Rocks Road and into an existing catch basin that overflows into an existing dissipater per County of San Diego As-Built Improvement Plan CG 4646. In summary, stormwater flows from DMA-B are treated by existing catch basin inserts with filter media, detained in an existing underground proprietary detention system, outlet onto Lizard Rocks Road, and ultimately into an existing dissipater that outlets to the vacant lot to the west of Lizard Rocks Road.

For DMA-C, the area was graded to drain into existing catch basin inserts with filter media for pollutant control prior to entering the underground storm drain system per Grading Plan L-14940. The existing underground storm drain system conveys stormwater into an existing above-ground excavated detention basin located in Drainage Area 9C, and then offsite into an existing concrete channel located south of the Project Site. In the proposed condition for DMA-C, this existing detention basin will be removed, therefore Drainage Area 9C will be disturbed. This area will be graded to drain into a proprietary biofiltration BMP for pollutant control before discharging into the existing storm drain that outlets into the existing offsite concrete channel. The proposed underground detention system collects stormwater runoff from remaining drainage areas within DMA-C and is sized to replace the existing detention basin. From the proposed detention system, stormwater will be slowly released into the existing concrete channel located south of the Site via a proposed manhole with weir and orifice as a flow control BMP. All other Drainage Areas in DMA-C will be undisturbed and the existing drainage pattern will remain.

For DMA-D, the entire drainage area remains undisturbed so no structural BMP is proposed.

For DMA-E, majority of the drainage area is pervious so the area is considered to be self-mitigating. DMA-E remains undisturbed as well.

7.2.2 Structural BMP Summary Table (Complete for all proposed structural BMPs)

- List and provide the information requested below for all pollutant control and hydromodification management BMPs proposed for the project.
- For each BMP listed, complete the Structural BMP Checklist on the next page. Copy the Checklist as many times as needed.

BMP ID #	DMA #	DMA Area (ft²)	Structural BMP Type							Permit # and Sheet #
			Harvest and Use	Infiltration	Unlined Biofiltration	Lined Biofiltration	Flow-thru treatment	Hydromodification Management [1]	Other	
1	1A	6,494	☐	☒	☐	☐	☐	☐	☐	CG 4646 Sheet 3A
2	2A-7A	77,348	☐	☐	☐	☒	☐	☐	☐	PDS2020-STP-03-026W1 Sheet 4
3	9C	5,859	☐	☐	☐	☒	☐	☐	☐	PDS2020-STP-03-026W1 Sheet 4
4	2A-7A	77,348	☐	☐	☐	☐	☐	☒	☐	PDS2020-STP-03-026W1 Sheet 4
5	1C-8C	221,148	☐	☐	☐	☐	☐	☒	☐	PDS2020-STP-03-026W1 Sheet 4
6	B	17,619	☐	☐	☐	☐	☒	☒	☒	L-14940 Sheet 3& 16
7	4B	4,789	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
8	5B	2,473	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
9	6B	215	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
10	7B	4,228	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
11	1C	22,661	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
12	2C	25,748	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
13	3C	15,625	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
14	5C	19,747	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
15	6C	20,017	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
16	7C	10,662	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
17	8C	14,420	☐	☐	☐	☐	☒	☐	☐	L-14940 Sheet 16
18	2A-7A	77,348	☐	☐	☐	☐	☐	☐	☒	PDS2020-STP-03-026W1 Sheet 4
19	1C-8C	221,148	☐	☐	☐	☐	☐	☐	☒	PDS2020-STP-03-026W1 Sheet 4
			☐	☐	☐	☐	☐	☐	☐	
			☐	☐	☐	☐	☐	☐	☐	
			☐	☐	☐	☐	☐	☐	☐	
			☐	☐	☐	☐	☐	☐	☐	

[1] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

			☒	☐	☒	☐	☐	☐	☐	

Copy and Paste table here for additional BMPs

7.3 Structural BMP Checklist (Complete once for each proposed structural BMP)

Structural BMP ID # 1	**Permit # and Sheet #** CG 4646 Sheet 3A
BMP Type	
Infiltration ☐ Infiltration basin (INF-1) ☒ Bioretention (INF-2) ☐ Permeable pavement (INF-3) **Unlined Biofiltration** ☐ Biofiltration with partial retention (PR-1) **Lined Biofiltration** ☐ Biofiltration (BF-1) ☐ Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3)	**Harvest and Use** ☐ Cistern (HU-1) **Flow-thru Treatment** (describe below) ☐ With prior lawful approval to meet earlier PDP requirements ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2] ☐ With alternative compliance **Hydromodification Management**[3] ☐ Detention pond or vault ☐ **Other** (describe below)
BMP Purpose	
☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification	☐ Pre-treatment/forebay for another BMP ☐ Other (describe below)
BMP Verification (See BMPDM Section 8.3)	
Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)				
BMP Maintenance Category	Cat. 1 ☐	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☒
Final owner of BMP	☐ HOA	☐ Property Owner	☒ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☐ Property Owner	☒ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)
Existing bioretention swale located within public right-of-way.

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.
[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID #	2	**Permit # and Sheet #**	PDS2020-STP-03-026W1 Sheet 4

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☒ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault

☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	Jim Kadakia (310) 936-5311 jim@sandpsolar.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☐	Cat. 2 ☒	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Modular Wetland System (MWS)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID #	3	**Permit # and Sheet #**	PDS2020-STP-03-026W1 Sheet 4

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☒ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault

☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	Jim Kadakia (310) 936-5311 jim@sandpsolar.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☐	Cat. 2 ☒	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Modular Wetland System

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID #	4	**Permit # and Sheet #**	PDS2020-STP-03-026W1 Sheet 4

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☒ Detention pond or vault

☐ **Other** (describe below)

BMP Purpose
- ☐ Pollutant control only
- ☒ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	Jim Kadakia (310) 936-5311 jim@sandpsolar.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

	Cat. 1	Cat. 2	Cat. 3	Cat. 4
BMP Maintenance Category	☐	☒	☐	☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	
	☐ Other (describe):			
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	
	☐ Other (describe):			

Discussion (As needed; Continue on subsequent pages as necessary)

Underground stormwater detention system

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID #	5	**Permit # and Sheet #**	PDS2020-STP-03-026W1 Sheet 4

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☒ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☐ Pollutant control only
- ☒ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	Jim Kadakia (310) 936-5311 jim@sandpsolar.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

	Cat. 1	Cat. 2	Cat. 3	Cat. 4
BMP Maintenance Category	☐	☒	☐	☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	
	☐ Other (describe):			
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	
	☐ Other (describe):			

Discussion (As needed; Continue on subsequent pages as necessary)

Underground stormwater detention system

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 6	**Permit # and Sheet #** L-14940 Sheet 3& 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☒ Detention pond or vault

☐ **Other** (describe below)

BMP Purpose
- ☐ Pollutant control only
- ☐ Hydromodification control only
- ☒ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☐	Cat. 2 ☒	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing Storm Chamber system

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 7	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01539)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 8	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01531)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 9	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01530)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 10	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01529)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 11	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01538)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 12	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01533)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 13	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01532)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 14	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01534)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 15	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01537)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 16	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01536)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 17	**Permit # and Sheet #** L-14940 Sheet 16

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☒ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

Existing media filter drain insert (DPW2013-WPTCBMP-01535)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID #	18	**Permit # and Sheet #**	PDS2020-STP-03-026W1 Sheet 4

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☒ **Other** (describe below)

BMP Purpose
- ☐ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☒ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	Jim Kadakia (310) 936-5311 jim@sandpsolar.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

	Cat. 1	Cat. 2	Cat. 3	Cat. 4
BMP Maintenance Category	☐	☒	☐	☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

CDS unit for pre-treatment prior to entering the underground detention system (BMP ID #4)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.
[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID #	19	**Permit # and Sheet #**	PDS2020-STP-03-026W1 Sheet 4

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☐ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault

☒ **Other** (describe below)

BMP Purpose
- ☐ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification
- ☒ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	Jim Kadakia (310) 936-5311 jim@sandpsolar.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

	Cat. 1	Cat. 2	Cat. 3	Cat. 4
BMP Maintenance Category	☐	☒	☐	☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	
	☐ Other (describe):			
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	
	☐ Other (describe):			

Discussion (As needed; Continue on subsequent pages as necessary)

CDS unit for pre-treatment prior to entering the underground detention system (BMP ID #5)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

7.4 Storm Water Pollutant Control Worksheet Calculations

- Use this page as a cover sheet for the submittal of any required worksheets below.
- Complete the checklist to identify which BMPDM Appendix B (Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods) worksheets are included with this attachment.
- See BMPDM Appendix B for an explanation of the applicability of individual worksheets and detailed guidance on their completion.

Worksheet	Requirement
☒ Worksheet B.1 Calculation of Design Capture Volume (DCV)	Required
☒ Worksheet B.2 Retention Requirements	Required
☒ Worksheet B.3 BMP Performance	Required
☐ Worksheet B.4 Major Maintenance Intervals for Reduced-sized BMPs	If applicable
☐ Other worksheets	As required

Automated Worksheet B.1: Calculation of Design Capture Volume (V2.0)

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	A	B	C	9C	D	E					unitless
	2	85th Percentile 24-hr Storm Depth	0.78	0.78	0.78	0.78	0.78	0.78					inches
	3	Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	84,726	16,049	134,727	5,475	9,123	196					sq-ft
	4	Semi-Pervious Surfaces Not Serving as Dispersion Area (C=0.30)	0	0	0	0	0	0					sq-ft
	5	Engineered Pervious Surfaces Not Serving as Dispersion Area (C=0.10)	4,701	1,570	6,970	384	8,054	0					sq-ft
	6	Natural Type A Soil Not Serving as Dispersion Area (C=0.10)	0	0	0	0	218,082	5,100					sq-ft
	7	Natural Type B Soil Not Serving as Dispersion Area (C=0.14)	0	0	0	0	0	0					sq-ft
	8	Natural Type C Soil Not Serving as Dispersion Area (C=0.23)	166,370	0	79,452	0	24,922	0					sq-ft
	9	Natural Type D Soil Not Serving as Dispersion Area (C=0.30)	0	0	0	0	0	0					sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	Yes	No	No	No	No	No					yes/no
	11	Impervious Surfaces **Directed to Dispersion Area** per SD-B (Ci=0.90)	3,506										sq-ft
	12	Semi-Pervious Surfaces **Serving as Dispersion Area** per SD-B (Ci=0.30)	0										sq-ft
	13	Engineered Pervious Surfaces **Serving as Dispersion Area** per SD-B (Ci=0.10)	6,355										sq-ft
	14	Natural Type A Soil **Serving as Dispersion Area** per SD-B (Ci=0.10)	0										sq-ft
	15	Natural Type B Soil **Serving as Dispersion Area** per SD-B (Ci=0.14)	0										sq-ft
	16	Natural Type C Soil **Serving as Dispersion Area** per SD-B (Ci=0.23)	0										sq-ft
	17	Natural Type D Soil **Serving as Dispersion Area** per SD-B (Ci=0.30)	0										sq-ft
	18	Number of Tree Wells Proposed per SD-A	0										#
	19	Average Mature Tree Canopy Diameter	0										ft
	20	Number of Rain Barrels Proposed per SD-E	0										#
	21	Average Rain Barrel Size	0										gal
Initial Runoff Factor Calculation	22	Total Tributary Area	265,658	17,619	221,148	5,859	260,180	5,296	0	0	0	0	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.45	0.83	0.63	0.85	0.14	0.13	0.00	0.00	0.00	0.00	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	25	Initial Weighted Runoff Factor	0.45	0.83	0.63	0.85	0.14	0.13	0.00	0.00	0.00	0.00	unitless
	26	Initial Design Capture Volume	7,770	951	9,056	324	2,368	45	0	0	0	0	cubic-feet
Dispersion Area Adjustments	27	Total Impervious Area Dispersed to Pervious Surface	3,506	0	0	0	0	0	0	0	0	0	sq-ft
	28	Total Pervious Dispersion Area	6,355	0	0	0	0	0	0	0	0	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	0.60	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.43	0.83	0.63	0.85	0.14	0.13	n/a	n/a	n/a	n/a	unitless
	32	Design Capture Volume After Dispersion Techniques	7,425	951	9,056	324	2,368	45	0	0	0	0	cubic-feet
Tree & Barrel Adjustments	33	Total Tree Well Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
	34	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	35	Final Adjusted Runoff Factor	0.43	0.83	0.63	0.85	0.14	0.13	0.00	0.00	0.00	0.00	unitless
	36	Final Effective Tributary Area	114,233	14,624	139,323	4,980	36,425	688	0	0	0	0	sq-ft
	37	Initial Design Capture Volume Retained by Site Design Elements	345	0	0	0	0	0	0	0	0	0	cubic-feet
	38	Final Design Capture Volume Tributary to BMP	7,425	951	9,056	324	2,368	45	0	0	0	0	cubic-feet

No Warning Messages

Automated Worksheet B.2: Retention Requirements (V2.0)

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
Basic Analysis	1	Drainage Basin ID or Name	A	B	C	9C	D	E	-	-	-	-	unitless
	2	85th Percentile Rainfall Depth	0.78	0.78	0.78	0.78	0.78	0.78	-	-	-	-	inches
	3	Predominant NRCS Soil Type Within BMP Location	C	C	C	C	A	A					unitless
	4	Is proposed BMP location Restricted or Unrestricted for Infiltration Activities?	Restricted	Restricted	Restricted	Restricted	Restricted	Restricted					unitless
	5	Nature of Restriction	Groundwater	Groundwater	Groundwater	Groundwater	Slopes	Slopes					unitless
	6	Do Minimum Retention Requirements Apply to this Project?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	yes/no
	7	Are Habitable Structures Greater than 9 Stories Proposed?	No	No	No	No	No	No					yes/no
Advanced Analysis	8	Has Geotechnical Engineer Performed an Infiltration Analysis?	No	No	No	No	No	No					yes/no
	9	Design Infiltration Rate Recommended by Geotechnical Engineer											in/hr
Result	10	Design Infiltration Rate Used To Determine Retention Requirements	0.000	0.000	0.000	0.000	0.000	0.000	-	-	-	-	in/hr
	11	Percent of Average Annual Runoff that Must be Retained within DMA	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	-	-	-	-	percentage
	12	Fraction of DCV Requiring Retention	0.01	0.01	0.01	0.01	0.01	0.01	-	-	-	-	ratio
	13	Required Retention Volume	74	10	91	3	24	0	-	-	-	-	cubic-feet

No Warning Messages

Steps outlined in **Appendix B, Section B.4.3 BMP Downstream of a Storage Unit**, of the **2020 San Diego County BMP Design Manual** are followed to demonstrate compliance with stormwater pollutant control requirements.

Step 1) Determine the flow rate from the upstream storage unit

Use the orifice equation to determine outflow from the storage unit when it is filled to the depth associated with the DCV.

DCV to be directed to MWS-L-8-8-V is 4,216 cf over 24 hours draindown time.
Flow rate from upstream storage unit is expected to be :
4,216 cf/(24 hrs x 3,600 sec/hrs) = 0.049 cfs

Step 2) Demonstrate that the proposed BMP can accommodate flows from the storage unit

Multiply the BMP surface area (ft^2) by the filtration rate of the biofiltration soil media (in/hr) and divide by 43,200 to convert the units into CFS. For proprietary BMPs, this rate should correspond with the rates from certified testing the manufacturer has performed.

BMP Surface Area = 94.72 ft^2
Biofiltration soil media filtration rate = 26 in/hr
Biofiltration rate = BMP Surface Area x Soil media filtration rate / 43,200 = **0.057** cfs
For proprietary BMPs, this rate should correspond with the rates from certified testing the manufacturer has performed.

Step 3) Demonstrate that the proposed BMP biofiltrates 92% of the annual runoff volume

If continuous simulation modeling has been performed, provide output reports from SWMM or SDHM modeling.

If continuous simulation modeling has not been performed, reference the percent capture nomographs in Figure B.3-1 to determine the percentage of annual runoff that is biofiltrated. To use the nomographs, applicants must represent the BMP storage capacity as a fraction of the DCV along the x-axis, trace a line vertically to the colored line representing the drawdown time of the system, and then determine the percentage of annual runoff biofiltrated by tracing horizontally to the y-axis.

Drawdown time = 24
BMP storage capacity = 6,000 cf
DCV = 4,216 cf (DCV for DMA-A minus subareas 9A and 10A that bypass to downstream)
Fraction of Design Capture Volume = 1.42

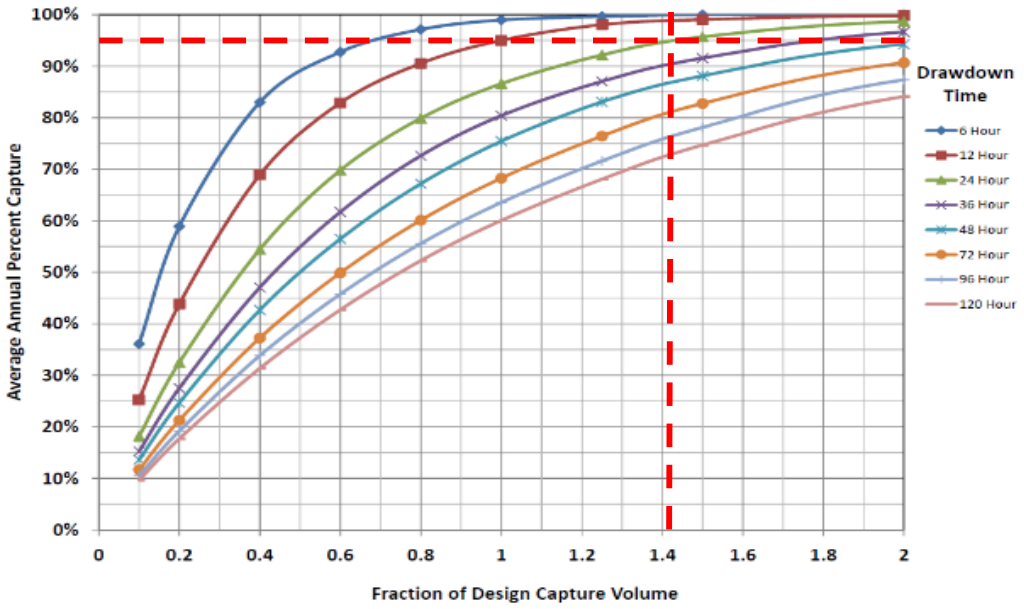


Figure B.3-1: Percent Capture Nomograph

Average annual percent capture from Figure B.3-1 = 95%

Step 4) **If the downstream biofiltration BMP is <3% of the effective tributary area, provide information supporting use of compact biofiltration as generally outlined below.**

Retention Requirements: Demonstrate that minimum retention requirements from Section B.2 are satisfied.

Worksheet B.1, Step 1, Line 37 for Design Basin A, DCV Retained = 345 cf

Worksheet B.2, Step 2, Line 13 for Design Basin A, Required Retention Volume = 74 cf

DCV Retained > Required Retention Volume **OK**

Maintenance Requirements: Demonstrate that the BMP design is expected to last 10 years before major maintenance is anticipated per Appendix B.4.1.

Maintenance requirements per manufacturer's recommendation.

Proprietary Requirements (if applicable): Provide proprietary information demonstrating that the device meets biofiltration criteria outlined in Appendices F.1-F.2.

See materials provided by the manufacturer.

Steps outlined in **Appendix F, Section F.1.2.2 Sizing of Flow-Based Biofiltration BMP**, of the **2020 San Diego County BMP Design Manual** are followed to demonstrate that the system is sized to treat 1.5 times the DCV since the proprietary BMP has an active Technology Acceptance Protocol-Ecology certification, with General Use Level Designation for the appropriate product pollutants of concerns as identified in Table F.1-1.

Step 1) Calculate the flow rate required to meet the pollutant treatment performance standard without scaling for the 1.5 factor.

Calculate the runoff flow rate from a 0.2 inch per hour uniform intensity precipitation event (See methodolgy Appendix J.5.3)

Sizing Flow-Thru Treatment Control BMPs per San Diego County BMP Design Manual, Appendix J.5.3

Q = C x I x A where

Q = Design flow rate (cfs)
C = Runoff factor, area-weighted estimate using SDC BMPDM Table B.1-1
i = Rainfall intensity of 0.2 in/hr
A = Tributary area (acres) which includes total area draining to the BMP, including offsite or onsite comingled runoff

DMA Subarea 9C is the only area tributary to the proposed MWS unit.

Runoff factor C for 9C =	0.85	
Tributary area A for 9C =	0.13	acres
Design flow rate Q =	0.02	cfs

Step 2) Multiply the flow rate from Step 1 by 1.5 to compute the design flow rate for the biofiltration system.

Design flow rate for biofiltration =	0.03	cfs

Step 3) Based on the conditions of certification/verification, establish the design capacity, as a flow rate, of a given sized unit.

Using manufacturer's sizing table, Model MWS-L-4-4 is selected to handle up to 0.052 cfs of treatment flow.

Step 4) Demonstrates that an appropriate unit size and number of units is provided to provide a flow rate that meets the rquired flow rate from Step 2.

Based on the project-specific detail provided by the manufacturer, the selected MWS-L-4-4-C model with height of 4' is adequate to treat 0.046 cfs of flow.

Step 5) Provide supplemental retention BMPs that will satisfy retention requirements in Appendix B.2.

From Worksheet B.2, the required retention volume for DMA Subarea 9C is calculated to be 3 cubic feet.

DCV retained by the selected MWS-L-4-4-4'-C model =	27	cubic feet
DCV Retained > Required Retention Volume?	**YES**	

Step 6) Demonstrate that the BMP design is expected to last 10 years before major maintenance is anticipated per guidance in Appendix B.4.1.

See maintenance guidelines provided by the manufacturer for maintenance frequencies

Flow Based Sizing

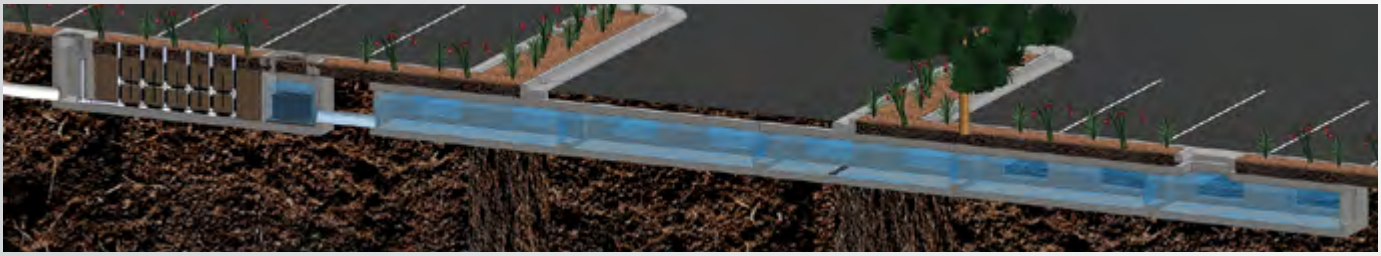
The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

Treatment Flow Sizing Table

Model #	Dimensions	WetlandMedia Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4' x 4'	23 ft^2	0.052
MWS-L-4-6	4' x 6'	32 ft^2	0.073
MWS-L-4-8	4' x 8'	50 ft^2	0.115
MWS-L-4-13	4' x 13'	63 ft^2	0.144
MWS-L-4-15	4' x 15'	76 ft^2	0.175
MWS-L-4-17	4' x 17'	90 ft^2	0.206
MWS-L-4-19	4' x 19'	103 ft^2	0.237
MWS-L-4-21	4' x 21'	117 ft^2	0.268
MWS-L-8-8	8' x 8'	100 ft^2	0.230
MWS-L-8-12	8' x 12'	151 ft^2	0.346
MWS-L-8-16	8' x 16'	201 ft^2	0.462

Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.



Treatment Volume Sizing Table

Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109
MWS-L-8-16	10073	20145

Maintenance Requirements

Worksheet B.4: Major Maintenance Intervals for Reduced Size BMPs

Category	#	Description	i	Units
Drainage Basin Info	1	Drainage Basin ID or Name	A	unitless
	2	Final Effective Tributary Area	73,018	sq-ft
	3	Provided BMP Surface Area	94.7	sq-ft
Biofiltration Clogging Inputs	4	Average Annual Precipitation	20	inches
	5	Load to Clog (default = 2.0)	2.0	in/sq-ft
	6	TSS Pretreatment Efficacy	0.5	ratio
	7	Percentage "Commercial"	31.1	percentage
	8	Percentage "Education"	0.0	percentage
	9	Percentage "Industrial"	0.0	percentage
	10	Percentage "Low Traffic Areas"	17.4	percentage
	11	Percentage "Multi-Family Residential"	0.0	percentage
	12	Percentage "Roof Areas"	43.9	percentage
	13	Percentage "Single Family Residential"	0.0	percentage
	14	Percentage "Transportation"	0.0	percentage
	15	Percentage "Vacant/Open Space"	4.5	percentage
	16	Percentage "Steep Hillslopes"	3.0	percentage
Minimum Footprint Calculations	17	Total Percentage of Above Land Uses	100.0	percentage
	18	Average TSS Concentration for Tributary After Pretreatment	44	mg/L
	19	Average Annual Runoff Volume	121,697	cubic-feet
	20	Average Annual TSS Load	336	lb/yr
	21	Available Sediment Storage within BMP	189	lb
Results	22	Anticipated Major Maintenance Frequency	1	year

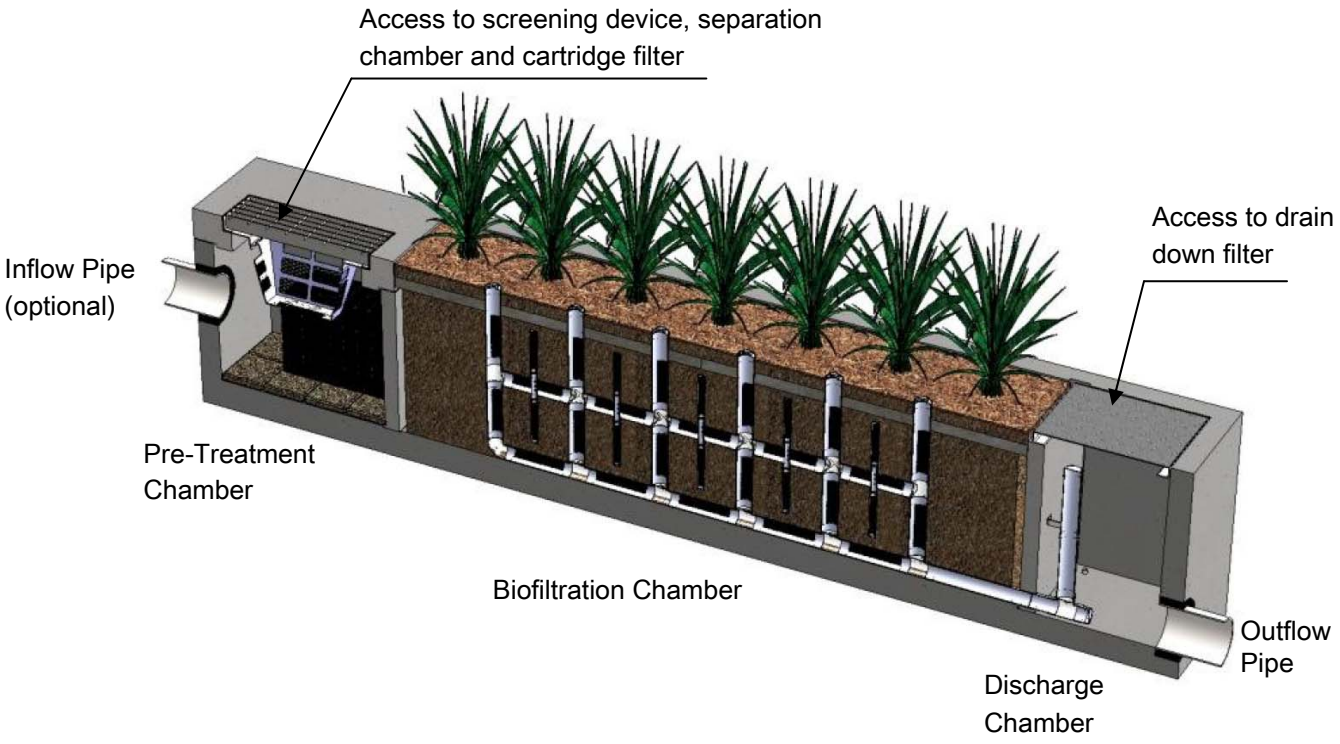
*** See maintenance guidelines provided by the manufacturer for maintenance frequencies**

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - (*5 minute average service time*).
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - (*5 minute average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.

Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Inspection Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes:

2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

Proprietary Requirements

recommended to document compliance with each criterion. Biofiltration BMPs that substantially meet all aspects of Fact Sheets PR-1 or BF-1 should still use this checklist; however additional documentation (beyond what is already required for project submittal) should not be required.

1. Biofiltration BMPs must be sized using acceptable sizing methods. Intent: The MS4 Permit and this manual defines specific sizing methods that must be used to size biofiltration BMPs. Sizing of biofiltration BMPs is a fundamental factor in the amount of storm water that can be treated and also influences volume and pollutant retention processes.		
☒	The project applicant has demonstrated that biofiltration BMPs are sized to meet one of the biofiltration sizing options available (Appendix B).	Submit sizing worksheets (Appendix B) or other equivalent documentation with the SWQMP.
2. Biofiltration BMPs must be designed with a hydraulic loading rate to maximize pollutant retention, preserve pollutant control processes, and minimize potential for pollutant washout. Intent: Various decisions about biofiltration BMP design influence the degree to which pollutants are retained. The MS4 Permit requires that biofiltration BMPs achieve maximum feasible retention of storm water pollutants.		
☐	Media selected for the biofiltration BMP meets minimum quality and material specifications, including the maximum allowable design filtration rate and minimum thickness of media.	Provide documentation that media meets the BSM specifications outlined in F.2.
	OR	
☒	Alternatively, for proprietary designs and custom media mixes not meeting the media specifications, field scale testing data are provided to demonstrate that proposed media meets the pollutant treatment performance criteria in Section F.1.1 below.	Provide documentation that the media meets the specifications.
☒	To the extent practicable, filtration rates are outlet controlled (e.g., via an underdrain and orifice/weir) instead of controlled by the infiltration rate of the media.	Include outlet control in designs or provide documentation of why outlet control is not practicable.
☒	The water surface drains to at least 12 inches below the media surface within 24 hours from the end of storm event flow to preserve plant health and promote healthy soil structure.	Include calculations to demonstrate that drawdown rate is adequate. Surface ponding drawdown time greater than 24-hours but less than 96 hours may be allowed at the discretion of County staff if certified by a landscape architect or agronomist.

☐	If nutrients are a pollutant of concern, design of the biofiltration BMP follows nutrient-sensitive design criteria.	Follow specifications for nutrient sensitive design in Fact Sheet BF-2. Or provide alternative documentation that nutrient treatment is addressed and potential for nutrient release is minimized.
☐	Media gradation calculations or geotextile selection calculations demonstrate that migration of media between layers will be prevented and permeability will be preserved.	Follow specification for choking layer or geotextile in Fact Sheet PR-1 or BF-1. Or include calculations to demonstrate that choking layer is appropriately specified.
3. Biofiltration BMPs must be vegetated to support and maintain treatment processes. Intent: Plants are important elements of biofiltration performance and longevity.		
☒	Plants have been selected to be tolerant of project climate, design ponding depths and the treatment media composition.	Provide documentation justifying plant selection. Refer to the plant list in Appendix F.
☒	Plants have been selected to minimize irrigation requirements.	Provide documentation describing irrigation requirements for establishment and long-term operation.
☒	Plant location and growth will not impede expected long-term media filtration rates and will enhance long term infiltration rates to the extent possible.	Provide documentation justifying plant selection. Refer to the plant list in Appendix F.
4. Biofiltration BMPs must be designed with a hydraulic loading rate to prevent erosion, scour, and channeling within the BMP. Intent: Erosion, scour, and/or channeling can disrupt treatment processes and reduce biofiltration effectiveness.		
☐	Scour protection has been provided for both sheet flow and pipe inflows to the BMP, where needed.	Provide documentation of scour protection as described in Fact Sheets PR-1 or BF-1 or approved equivalent.
☐	Where scour protection has not been provided, flows into and within the BMP are kept to non-erosive velocities.	Provide documentation of design checks for erosive velocities as described in Fact Sheets PR-1 or BF-1 or approved equivalent.
☒	For proprietary BMPs, the BMP is used in a manner consistent with manufacturer guidelines and conditions of its third-party certification[4] (i.e., maximum tributary area, maximum inflow velocities, etc., as applicable).	Provide copy of manufacturer recommendations and conditions of third-party certification.

[4] Certifications or verifications issued by the Washington Technology Acceptance Protocol-Ecology program and the New Jersey Corporation for Advanced Technology programs are typically accompanied by a set of guidelines regarding appropriate design and maintenance conditions that would be consistent with the certification/verification

5. Biofiltration BMP must include operations and maintenance design features and planning considerations for continued effectiveness of pollutant and flow control functions.

Intent: Biofiltration BMPs require regular maintenance in order provide ongoing function as intended. Additionally, it is not possible to foresee and avoid potential issues as part of design; therefore, plans must be in place to correct issues if they arise.

☒	The biofiltration BMP maintenance plan describes specific inspection activities, regular/periodic maintenance activities and specific corrective actions relating to scour, erosion, channeling, media clogging, vegetation health, and inflow and outflow structures.	Include maintenance plan with the SWQMP as described in Chapter 7.
☒	Adequate site area and features have been provided for BMP inspection and maintenance access.	Illustrate maintenance access routes, setbacks, maintenance features as needed on project water quality plans.
☒	For proprietary biofiltration BMPs, the BMP maintenance plan is consistent with manufacturer guidelines and conditions of its third-party certification (i.e., maintenance activities, frequencies).	Provide copy of manufacturer recommendations and conditions of third-party certification.

6. Proprietary Biofiltration BMPs must provide evidence that the BMP has been certified for use as part of the Washington State Technology Assessment Protocol-Ecology certification program or other equivalent third party submit evaluation.

Intent: Must prove through a vetted testing protocol that the BMP functions at the same level or better than a non-proprietary Biofiltration BMP.

☒	Must be Biofiltration BMPs that have an active Technology Acceptance Protocol-Ecology certification, with General Use Level Designation.	Provide documentation as outlined in F.1.1, below with the SWQMP
☒	BMP must be used in a manner consistent with all conditions of the Technology Acceptance Protocol-Ecology certification while meeting the flow rate or volume design criteria that is required for biofiltration BMPs under this manual.	See guidance below in F.1.2.1 to provide proper documentation.
	OR	
☐	BMP may be acceptable if it meets other third-party protocol and the pollutant treatment performance of the system is consistent with the performance levels associated with the necessary Technology Acceptance Protocol-Ecology certifications	See Guidance below in F.1.1 to provide proper documentation.

SPECIFICATIONS – WetlandMedia

Overview: Media shall consist of ceramic material produced by expanding and vitrifying select material in a rotary kiln. Media must be produced to meet the requirements of ASTM C330, ASTM C331, and AASHTO M195. Aggregates must have a minimum 24-hour water absorption of 10.5% mass. Media shall not contain any organic material. Flow through media shall be horizontal from the outer perimeter of the chamber toward the centralized and vertically extending underdrain. The retention time in the media shall be at least 3 minutes. Downward flow filters are not acceptable alternatives. The thickness of the media shall be at least 19" from influent end to effluent end. The loading rate on the media shall not exceed 1.1 gallons per minute per square foot surface area. Media must be contained within structure that spaces the surface of the media at least 2" from all vertically extending walls of the concrete structure.

Coverage: When properly installed WetlandMedia provide sufficient contact time, at rated flows, of passing contaminated water. WetlandMedia material will capture and retain a large percentage of pollutants that pass through. This filter media utilizes physical, chemical, and biological mechanisms to capture and remove the passing pollutants.

Non-Corrosive Materials: WetlandMedia material is made of non-corrosive substances.

Durability: WetlandMedia has proven durability, with an expected life of 10 to 20 years under normal operating conditions including stormwater applications and nuisance flows. The WetlandMedia material is of sufficient strength to support water, sediment, and debris loads when the media is at maximum flow; with no slippage, breaking, or tearing. The WetlandMedia material has been tested through rigorous flow and loading conditions.

Physical Characteristics: WetlandMedia is composed of granules and is red to gray to brown in color. The size of the granules are between 1 and 5 mm. The material is porous

with an internal void percentage as high as 23%. Void space between granules due to its angular shape is up to 48%.

Replacement: Removal and replacement of WetlandMedia is simple. Remove media from filtration system or other application. Replace with new media of equal volume (call 760-433-7640 to order).

Disposal: The product can typically be disposed of in an ordinary landfill (local regulations may apply). We recommend that appropriate testing be done on spent WetlandMedia to determine appropriate disposal procedures. High levels of stormwater pollutants may be present on and within the material. WetlandMedia has the ability to capture and retain large amounts of nutrients, toxins, hydrocarbons, metals, and other organic compounds. If you are unsure of the regulations, contact your local Public Health Department or the local office of the Environmental Protection Agency (EPA).

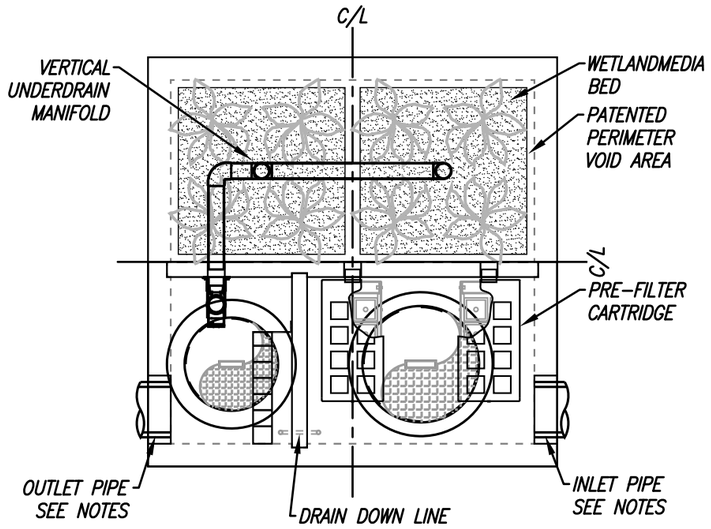
SITE SPECIFIC DATA			
PROJECT NUMBER		12099	
PROJECT NAME		28435 LIZARD ROCKS ROAD	
PROJECT LOCATION		VALLEY CENTER, CA	
STRUCTURE ID		BMP #2	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
6,000			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	353.06	HDPE	12"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	351.72	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	358.00	358.00	358.00
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	ø30"	OPEN PLANTER	ø24"
WETLANDMEDIA VOLUME (CY)			6.28
ORIFICE SIZE (DIA. INCHES)			5 EA ø0.63"
NOTES: PRELIMINARY NOT FOR CONSTRUCTION. EOR TO SET UPSTREAM BYPASS AT 355.90.			

INSTALLATION NOTES

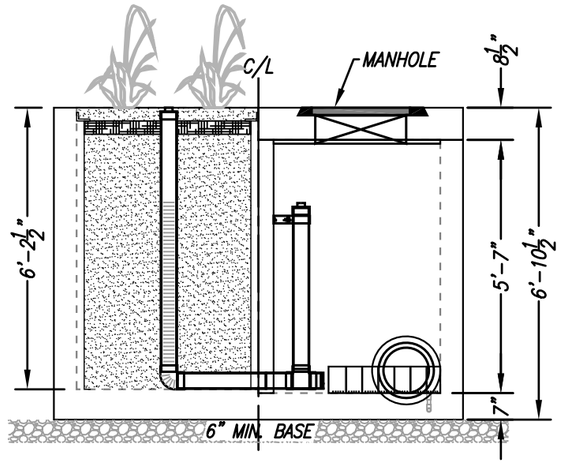
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

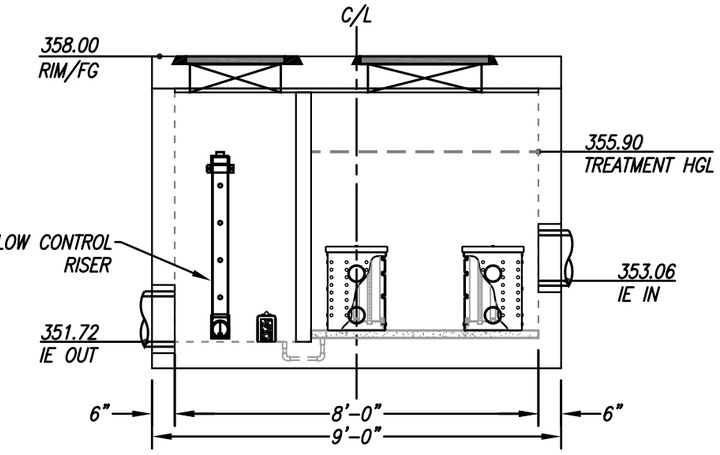
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



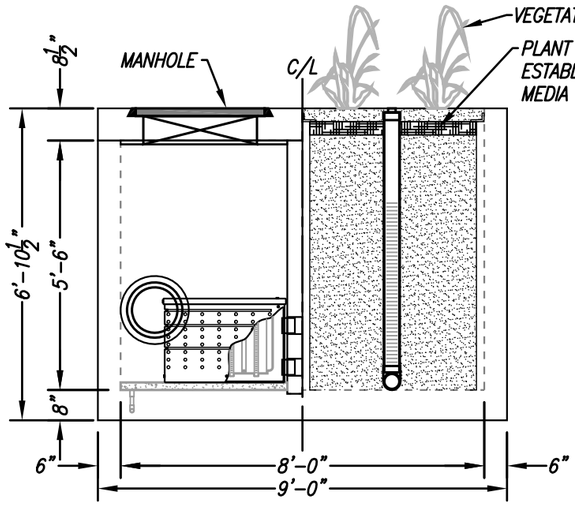
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	6,000
DRAINDOWN DURATION (HOURS)	24
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	31.55
OPERATING HEAD (FT)	4.1
WETLANDMEDIA INFILTRATION RATE (IN/HR) OR	26
WETLANDMEDIA LOADING RATE (GPM/SF) OR	0.26

MODULAR WETLANDS

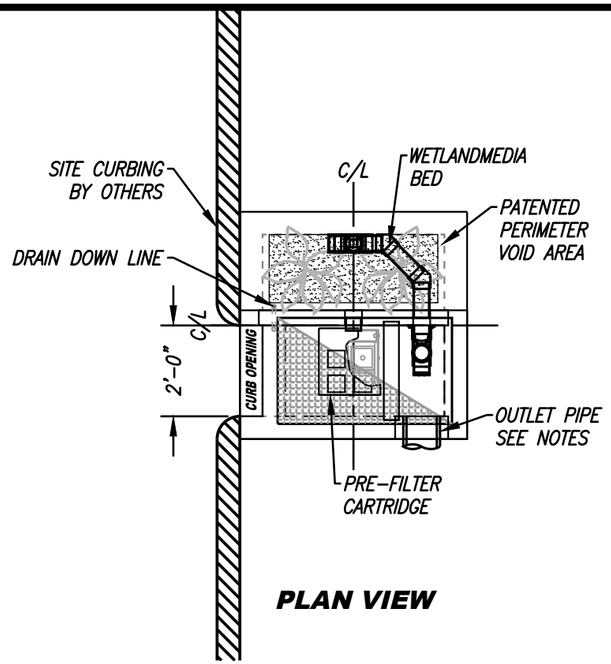
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

Bio Clean
A Forterra Company

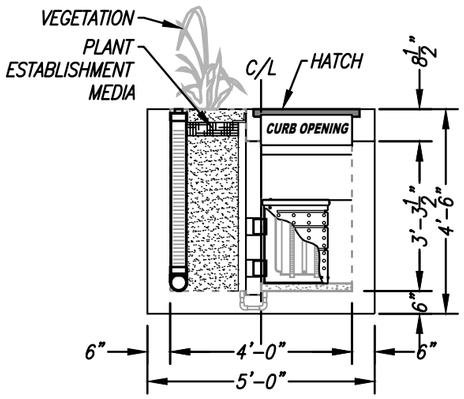
MWS-L-8-8-6'-2.5"-V-HC
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

5/5/21 JCHANG

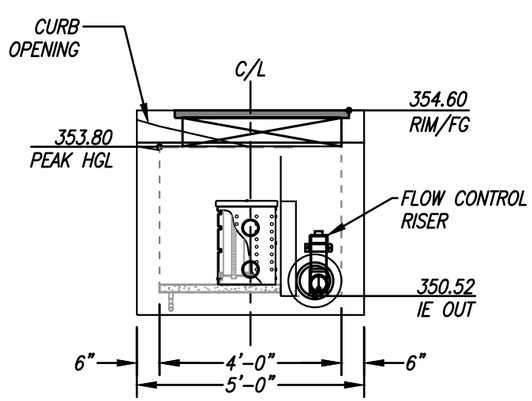
SITE SPECIFIC DATA			
PROJECT NUMBER		12099	
PROJECT NAME		28435 LIZARD ROCKS ROAD	
PROJECT LOCATION		VALLEY CENTER, CA	
STRUCTURE ID		BMP #3	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.046	
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			1.08
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	N/A	N/A	N/A
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	350.52	PVC	8"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	354.60	354.60	354.60
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	24" X 42"	OPEN PLANTER	N/A
WETLANDMEDIA VOLUME (CY)			0.82
ORIFICE SIZE (DIA. INCHES)			ø1.00"
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



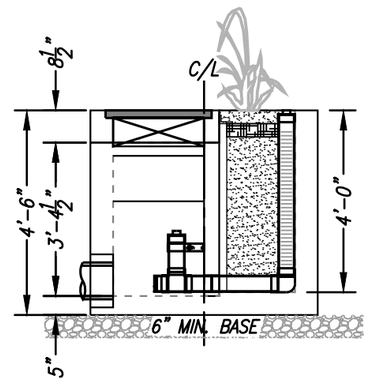
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

INTERNAL BYPASS DISCLOSURE:

THE DESIGN AND CAPACITY OF THE PEAK CONVEYANCE METHOD TO BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. HGL(S) AT PEAK FLOW SHALL BE ASSESSED TO ENSURE NO UPSTREAM FLOODING. PEAK HGL AND BYPASS CAPACITY SHOWN ON DRAWING ARE USED FOR GUIDANCE ONLY.

TREATMENT FLOW (CFS)	0.046
OPERATING HEAD (FT)	3.0
PRETREATMENT LOADING RATE (GPM/SF)	1.6
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-4-4-4'-0"-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

11/25/20CSCHIPPER

USDA Agricultural Research Service

United States Department of Agriculture

Mapping by PRISM Climate Group - Oregon State University

Stay Connected

Home | View Maps | About | Map & Data Downloads | Interactive Map | Help

You are here: Home / Interactive Map

Interactive Map

ZIP Code: 92082 Locate

Choose Location: Lower 48 States

Choose Basemap: Terrain

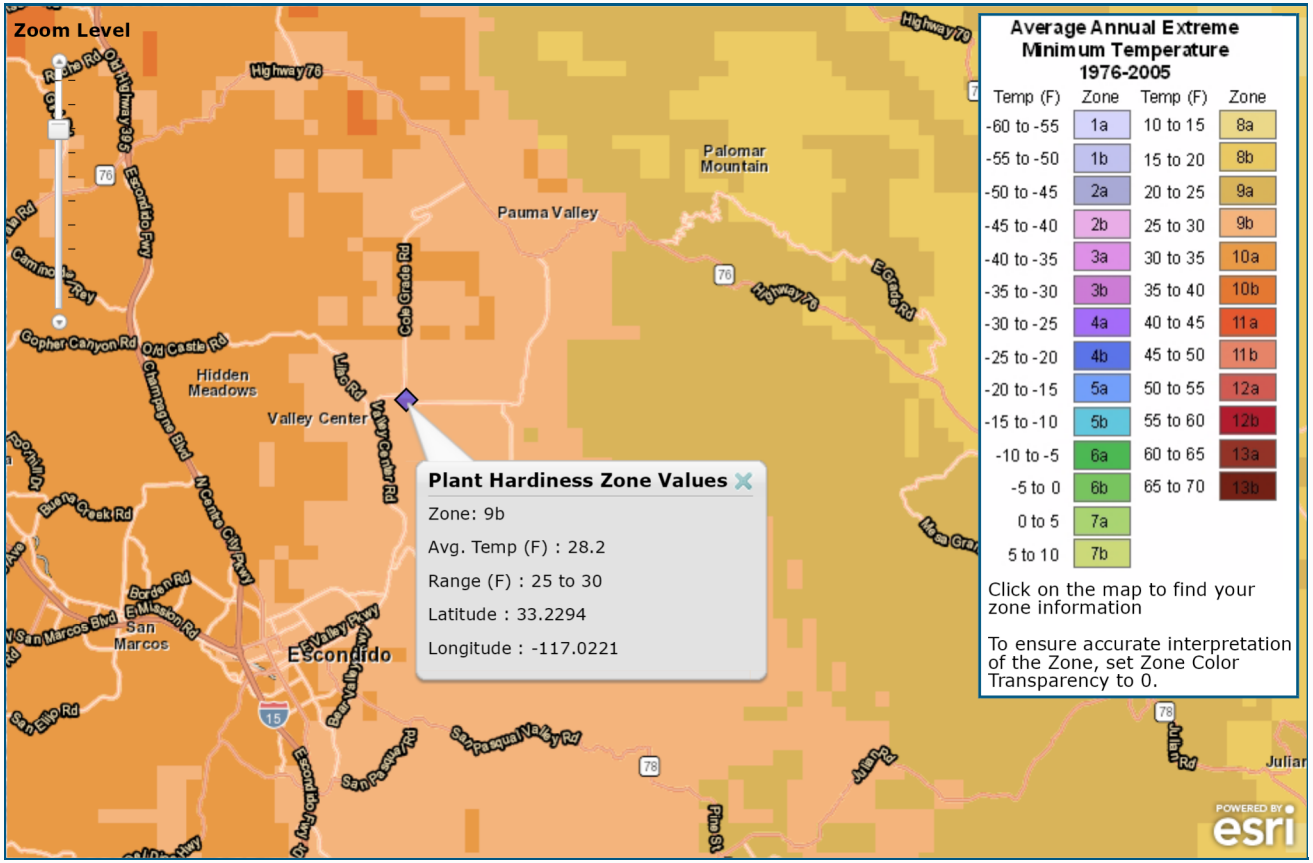
Turn on Basemap Roads and Labels

Zone Color Transparency

100 75 50 25 0

Help with this Map

Hide Legend



Modular Wetland System - Linear® Plants for Hardy Zone 9

Common Name ***Latin Name***	**Sun**	**Hardy Range**	**Height**	**Flower Color**
Japanese sweet flag, Japanese rush *Acorus gramineus*	full sun to partial shade	USDA Zones 6-9	.5 to 1.5 feet	green
papyrus, Egyptian papyrus, bulrushes *Cyperus papyrus*	full sun to partial shade	USDA Zones 9-11	2 to 10 feet	white
drooping sedge, weeping sedge *Carex pendula*	partial shade	USDA Zones 5-9	2 to 4 feet	green
Japanese blood grass, cogongrass, kunai *Imperata cylindrica*	full sun to partial shade	USDA Zones 5-9	2 to 4 feet	green
cattail, reed-mace *Typha latifolia*	full sun	USDA Zones 2-11	3 to 9 feet	brown
Oshima sedge, Oshima kan sedge *Carex oshimensis*	full sun to partial shade	USDA Zones 5-9	1 to 2 feet	brown
little bluestem, seacoast bluestem *Schizachyrium scoparium*	full sun to partial shade	USDA Zones 3-9	.5 to 3 feet	brown
canna, canna tropicana, canna lilly *Canna X generalis*	full sun to partial shade	USDA Zones 8-11	2.5 to 8 feet	yellow, orange, red
Lily-of-the-Nile, African Lily, African Blue Lily *Agapanthus spp*	full sun to partial shade	USDA Zones 8-11	2 to 4 feet	blue
Vetiveria zizanioides (L.) Nash Vetiver Grass	full sun	USDA Zones 5-11	2 to 8 feet	green
giant wild rye *Leymus condensatus*	full sun	USDA Zones 3-11	4 to 8 feet	brown
society garlic, pink agapanthus *Tulbaghia violacea*	full sun to full shade	USDA Zones 7-10	1.5 to 3 feet	lavender

Gulf muhlygrass, mist grass, hairawn muhly *Muhlenbergia capillaris*	full sun to partial shade	USDA Zones 5-10	2 to 3 feet	pinkish purple
Lindheimer's muhlygrass, blue muhlygrass *Muhlenbergia lindheimeri*	full sun	USDA Zones 7-11	2 to 4 feet	purple to gray
horsetail, scouring rush, E. prealtum *Equisetum hyemale*	full sun to light shade	USDA Zones 3-11	2 to 4 feet	n/a
lavender *Lavandula L.*	sun	USDA Zones 5-10	1 to 2 feet	purple
big bluestem, turkey foot bluestem *Andropogon gerardii*	sun	USDA Zones 3-9	4 to 6 feet	red
palm sedge *Carex phyllocephala*	full sun to full shade	USDA Zones 7-10	1 to 2 feet	green
umbrella sedge, umbrella plant *Cyperus involucratus*	full sun to partial shade	USDA Zones 8-11	2 to 6 feet	green/white
feather grass, Mexican needle grass *Nassella tenuissima*	full sun to partial shade	USDA Zones 7-11	2 to 3 feet	green/brown
switchgrass, prairie switchgrass *Panicum virgatum*	full sun to partial shade	USDA Zones 4-9	3 to 4 feet	green/white
indiangrass, yellow indiangrass *Sorghastrum nutans*	full sun to partial shade	USDA Zones 3-9	2 to 6 feet	redish/brown
sea oats, Chasmanthium paniculatum *Uniola paniculata*	full sun to partial shade	USDA Zones 6-10	3 to 6 feet	golden/brown
Cape lily, Powell's crinum lily *Crinum X powellii*	full sun to partial shade	USDA Zones 6-11	3 to 4 feet	white/pink
African iris, fortnight lily, morea iris *Dietes iridioides*	full sun to partial shade	USDA Zones 8-10	2 to 4 feet	white/purple
purple coneflower *Echinacea purpurea*	full sun to partial shade	USDA Zones 3-9	2 to 3 feet	pink
Joe Pye weed, queen-of-the-meadow *Eupatorium fistulosum*	full sun to partial shade	USDA Zones 3-9	3 to 10 feet	pink/purple

whirling butterflies, white gaura *Gaura lindheimeri*	full sun to partial shade	USDA Zones 5-10	2 to 4 feet	white/pink
oxeye sunflower, false sunflower *Heliopsis helianthoides*	full sun to partial shade	USDA Zones 2-9	3 to 5 feet	yellow
daylily *Hemerocallis hybrids*	full sun to partial shade	USDA Zones 2-10	1 to 3.5 feet	various
summer snowflake, giant snowflake *Leucojum aestivum*	full sun to partial shade	USDA Zones 4-9	1 to 2 feet	white
Russian sage *Perovskia atriplicifolia*	full sun	USDA Zones 5-9	3 to 5 feet	purple
Adam's needle, bear grass, weak-leaf yucca *Yucca filamentosa*	full sun	USDA Zones 5-10	3 to 5 feet	white
brome hummock sedge *carex bromoides*	full sun to partial shade	USDA Zones 2-10	1 ft	green

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The Modular Wetland System - Linear® standard 22' long system will require 18 to 20 plants. Different size systems will require different plant quanitities; please contact us for detailed information.

The plants listed are tolerant to drought and have deep roots to allow for ehanced pollutant removal.

These plants are subject to availability in local areas. If you would like to use a different plant please contact us. We will work with you to ensure the chosen plants work with the projects current landscape theme.

The Modular Wetland System - Linear® should be irrigated like any other planter area. The plants in the system must receive adequate irrigation to ensure plant survival during periods of drier weather. As with all landscape areas the plants within the Modular Wetland System - Linear will require more frequent watering during the establishment period.

For more information please contact at: 760-433-7640 or email: info@modularwetlands.com

WASHINGTON STATE DEPARTMENT OF ECOLOGY

July 2017

GENERAL USE LEVEL DESIGNATION FOR BASIC, ENHANCED, AND PHOSPHORUS TREATMENT

For the

MWS-Linear Modular Wetland

Ecology's Decision:

Based on Modular Wetland Systems, Inc. application submissions, including the Technical Evaluation Report, dated April 1, 2014, Ecology hereby issues the following use level designation:

1. General use level designation (GULD) for the MWS-Linear Modular Wetland Stormwater Treatment System for Basic treatment

    - Sized at a hydraulic loading rate of 1 gallon per minute (gpm) per square foot (sq ft) of wetland cell surface area. For moderate pollutant loading rates (low to medium density residential basins), size the Prefilters at 3.0 gpm/sq ft of cartridge surface area. For high loading rates (commercial and industrial basins), size the Prefilters at 2.1 gpm/sq ft of cartridge surface area.

2. General use level designation (GULD) for the MWS-Linear Modular Wetland Stormwater Treatment System for Phosphorus treatment

    - Sized at a hydraulic loading rate of 1 gallon per minute (gpm) per square foot (sq ft) of wetland cell surface area. For moderate pollutant loading rates (low to medium density residential basins), size the Prefilters at 3.0 gpm/sq ft of cartridge surface area. For high loading rates (commercial and industrial basins), size the Prefilters at 2.1 gpm/sq ft of cartridge surface area.

3. General use level designation (GULD) for the MWS-Linear Modular Wetland Stormwater Treatment System for Enhanced treatment

    - Sized at a hydraulic loading rate of 1 gallon per minute (gpm) per square foot (sq ft) of wetland cell surface area. For moderate pollutant loading rates (low to medium density residential basins), size the Prefilters at 3.0 gpm/sq ft of cartridge surface area. For high loading rates (commercial and industrial basins), size the Prefilters at 2.1 gpm/sq ft of cartridge surface area.

4. Ecology approves the MWS - Linear Modular Wetland Stormwater Treatment System units for Basic, Phosphorus, and Enhanced treatment at the hydraulic loading rate listed above. Designers shall calculate the water quality design flow rates using the following procedures:

    - Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.
    - Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.
    - Entire State: For treatment installed downstream of detention, the water quality design flow rate is the full 2-year release rate of the detention facility.

5. These use level designations have no expiration date but may be revoked or amended by Ecology, and are subject to the conditions specified below.

Ecology's Conditions of Use:

Applicants shall comply with the following conditions:

1. Design, assemble, install, operate, and maintain the MWS – Linear Modular Wetland Stormwater Treatment System units, in accordance with Modular Wetland Systems, Inc. applicable manuals and documents and the Ecology Decision.
2. Each site plan must undergo Modular Wetland Systems, Inc. review and approval before site installation. This ensures that site grading and slope are appropriate for use of a MWS – Linear Modular Wetland Stormwater Treatment System unit.
3. MWS – Linear Modular Wetland Stormwater Treatment System media shall conform to the specifications submitted to, and approved by, Ecology.
4. The applicant tested the MWS – Linear Modular Wetland Stormwater Treatment System with an external bypass weir. This weir limited the depth of water flowing through the media, and therefore the active treatment area, to below the root zone of the plants. This GULD applies to MWS – Linear Modular Wetland Stormwater Treatment Systems whether plants are included in the final product or not.
5. Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of manufactured filter treatment device.

    - Typically, Modular Wetland Systems, Inc. designs MWS - Linear Modular Wetland systems for a target prefilter media life of 6 to 12 months.
    - Indications of the need for maintenance include effluent flow decreasing to below the design flow rate or decrease in treatment below required levels.
    - Owners/operators must inspect MWS - Linear Modular Wetland systems for a minimum of twelve months from the start of post-construction operation to determine site-specific

maintenance schedules and requirements. You must conduct inspections monthly during the wet season, and every other month during the dry season. (According to the SWMMWW, the wet season in western Washington is October 1 to April 30. According to SWMMEW, the wet season in eastern Washington is October 1 to June 30). After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections.

- Conduct inspections by qualified personnel, follow manufacturer's guidelines, and use methods capable of determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.
- When inspections are performed, the following findings typically serve as maintenance triggers:
    - Standing water remains in the vault between rain events, or
    - Bypass occurs during storms smaller than the design storm.
    - If excessive floatables (trash and debris) are present (but no standing water or excessive sedimentation), perform a minor maintenance consisting of gross solids removal, not prefilter media replacement.
    - Additional data collection will be used to create a correlation between pretreatment chamber sediment depth and pre-filter clogging (see *Issues to be Addressed by the Company* section below)

6. Discharges from the MWS - Linear Modular Wetland Stormwater Treatment System units shall not cause or contribute to water quality standards violations in receiving waters.

Applicant:	Modular Wetland Systems, Inc.
Applicant's Address:	*PO. Box 869* *Oceanside, CA 92054*

Application Documents:

- *Original Application for Conditional Use Level Designation*, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., January 2011
- *Quality Assurance Project Plan*: Modular Wetland system – Linear Treatment System performance Monitoring Project, draft, January 2011.
- *Revised Application for Conditional Use Level Designation*, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., May 2011
- *Memorandum: Modular Wetland System-Linear GULD Application Supplementary Data, April 2014*
- *Technical Evaluation Report: Modular Wetland System Stormwater Treatment System Performance Monitoring, April 2014.*

Applicant's Use Level Request:

General use level designation as a Basic, Enhanced, and Phosphorus treatment device in accordance with Ecology's Guidance for Evaluating Emerging Stormwater Treatment Technologies Technology Assessment Protocol – Ecology (TAPE) January 2011 Revision.

Applicant's Performance Claims:

- The MWS – Linear Modular wetland is capable of removing a minimum of 80-percent of TSS from stormwater with influent concentrations between 100 and 200 mg/l.
- The MWS – Linear Modular wetland is capable of removing a minimum of 50-percent of Total Phosphorus from stormwater with influent concentrations between 0.1 and 0.5 mg/l.
- The MWS – Linear Modular wetland is capable of removing a minimum of 30-percent of dissolved Copper from stormwater with influent concentrations between 0.005 and 0.020 mg/l.
- The MWS – Linear Modular wetland is capable of removing a minimum of 60-percent of dissolved Zinc from stormwater with influent concentrations between 0.02 and 0.30 mg/l.

Ecology Recommendations:

- Modular Wetland Systems, Inc. has shown Ecology, through laboratory and field-testing, that the MWS - Linear Modular Wetland Stormwater Treatment System filter system is capable of attaining Ecology's Basic, Total phosphorus, and Enhanced treatment goals.

Findings of Fact:

<u>Laboratory Testing</u>

The MWS-Linear Modular wetland has the:

- Capability to remove 99 percent of total suspended solids (using Sil-Co-Sil 106) in a quarter-scale model with influent concentrations of 270 mg/L.
- Capability to remove 91 percent of total suspended solids (using Sil-Co-Sil 106) in laboratory conditions with influent concentrations of 84.6 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 93 percent of dissolved Copper in a quarter-scale model with influent concentrations of 0.757 mg/L.
- Capability to remove 79 percent of dissolved Copper in laboratory conditions with influent concentrations of 0.567 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 80.5-percent of dissolved Zinc in a quarter-scale model with influent concentrations of 0.95 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 78-percent of dissolved Zinc in laboratory conditions with influent concentrations of 0.75 mg/L at a flow rate of 3.0 gpm per square foot of media.

Field Testing

- Modular Wetland Systems, Inc. conducted monitoring of an MWS-Linear (Model # MWS-L-4-13) from April 2012 through May 2013, at a transportation maintenance facility in Portland, Oregon. The manufacturer collected flow-weighted composite samples of the system's influent and effluent during 28 separate storm events. The system treated approximately 75 percent of the runoff from 53.5 inches of rainfall during the monitoring period. The applicant sized the system at 1 gpm/sq ft. (wetland media) and 3gpm/sq ft. (prefilter).
- Influent TSS concentrations for qualifying sampled storm events ranged from 20 to 339 mg/L. Average TSS removal for influent concentrations greater than 100 mg/L (n=7) averaged 85 percent. For influent concentrations in the range of 20-100 mg/L (n=18), the upper 95 percent confidence interval about the mean effluent concentration was 12.8 mg/L.
- Total phosphorus removal for 17 events with influent TP concentrations in the range of 0.1 to 0.5 mg/L averaged 65 percent. A bootstrap estimate of the lower 95 percent confidence limit (LCL95) of the mean total phosphorus reduction was 58 percent.
- The lower 95 percent confidence limit of the mean percent removal was 60.5 percent for dissolved zinc for influent concentrations in the range of 0.02 to 0.3 mg/L (n=11). The lower 95 percent confidence limit of the mean percent removal was 32.5 percent for dissolved copper for influent concentrations in the range of 0.005 to 0.02 mg/L (n=14) at flow rates up to 28 gpm (design flow rate 41 gpm). Laboratory test data augmented the data set, showing dissolved copper removal at the design flow rate of 41 gpm (93 percent reduction in influent dissolved copper of 0.757 mg/L).

Issues to be addressed by the Company:

1. Modular Wetland Systems, Inc. should collect maintenance and inspection data for the first year on all installations in the Northwest in order to assess standard maintenance requirements for various land uses in the region. Modular Wetland Systems, Inc. should use these data to establish required maintenance cycles.
2. Modular Wetland Systems, Inc. should collect pre-treatment chamber sediment depth data for the first year of operation for all installations in the Northwest. Modular Wetland Systems, Inc. will use these data to create a correlation between sediment depth and pre-filter clogging.

Technology Description:
Download at http://www.modularwetlands.com/

Contact Information:

Applicant: Zach Kent
BioClean A Forterra Company.
398 Vi9a El Centro
Oceanside, CA 92058
zach.kent@forterrabp.com

Applicant website: http://www.modularwetlands.com/

Ecology web link: http://www.ecy.wa.gov/programs/wg/stormwater/newtech/index.html

Ecology: Douglas C. Howie, P.E.
Department of Ecology
Water Quality Program
(360) 407-6444
douglas.howie@ecy.wa.gov

Revision History

Date	**Revision**
June 2011	Original use-level-designation document
September 2012	Revised dates for TER and expiration
January 2013	Modified Design Storm Description, added Revision Table, added maintenance discussion, modified format in accordance with Ecology standard
December 2013	Updated name of Applicant
April 2014	Approved GULD designation for Basic, Phosphorus, and Enhanced treatment
December 2015	Updated GULD to document the acceptance of MWS-Linear Modular Wetland installations with or without the inclusion of plants
July 2017	Revised Manufacturer Contact Information (name, address, and email)

7.5 Identification and Narrative of Receiving Water and Pollutants of Concern

- Complete this sub-attachment *only if flow-thru treatment BMPs are implemented onsite* in lieu of retention or biofiltration BMPs. Unless excepted because of a Prior Lawful Approval[4], PDPs must also participate in an alternative compliance program[5].

A. General Description

Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable).

Strom water runoff generated from the Project Site and adjacent property to the east of the Site is discharged into either the existing public storm drain system in Lizard Rocks Road or into the existing concrete ditch south of the project Site. The existing public storm drain system in Lizard Rocks Road drains into a vacant lot west of Lizard Rocks Road. The existing concrete ditch south of the Project Site flows westerly and discharges runoff into Cole Grade Road. All stormwater runoff generated the Site ultimately discharge into San Luis Rey River and Pacific Ocean.

B. Water Body Impairments and Priorities

List any 303(d) impaired water bodies[6] within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs / WQIP Highest Priority Pollutant

C. Identification of Project Site Pollutants

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6.

Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	☐	☒	☐
Nutrients	☐	☒	☐
Heavy Metals	☐	☒	☐
Organic Compounds	☐	☒	☐
Trash & Debris	☐	☒	☐
Oxygen Demanding Substances	☐	☒	☐
Oil & Grease	☐	☒	☐
Bacteria & Viruses	☐	☒	☐
Pesticides	☐	☒	☐

[4] See BMPDM Appendix L: Prior Lawful Approval Requirements and Guidance.
[5] See SWQMP Attachment 12 (Alternative Compliance Projects) and BMPDM Appendix J (Offsite Alternative Compliance Requirements and Guidance).
[6] The current list of Section 303(d) impaired water bodies can be found at: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml

8.0 General Requirements

- Completion of this attachment is required for all PDPs subject to hydromodification management requirements (see PDP SWQMP Form Table 5). Do not submit this attachment if exempt from Hydromodification Management requirements. Document the PDP exemption in Attachment 9.
- Submit this cover page and all required Sub-attachments for all structural hydromodification management BMPs proposed for the project.
- Constructed features must fully satisfy the requirements described in applicable BMPDM sections and appendices, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.
- Structural BMP Certification. All structural hydromodification management BMPs documented this attachment must be certified by a registered engineer in Attachment 7, Sub-attachment 7.1.
- Structural BMP Verification. BMP installation must be verified by the County at the completion of construction. Applicants must complete an Installation Verification Form (Attachment 10).

Sub-attachments (check all that are completed)
☒ **8.1: Flow Control Facility Design** (required)[1] Submit using ☒ the Sub-attachment 8.1 cover sheet provided, or ☐ as a separate stand-alone document labeled Sub-attachment 8.1.
☒ **8.2: Hydromodification Management Points of Compliance** (required) Complete the table provided in Sub-attachment 8.2.
8.3: Geomorphic Assessment of Receiving Channels 1. Has a geomorphic assessment been performed for the receiving channel(s)? ☒ No, the low flow threshold is 0.1Q2 (default low flow threshold)
☐ Yes (provide the information below): Low flow threshold: ☐ 0.1Q2 ☐ 0.3Q2 ☐ 0.5Q2
Title: Date: Preparer:
Submit using ☐ the Sub-attachment 8.3 cover sheet provided, or ☐ as a separate stand-alone document labeled Sub-attachment 8.3.
8.4: Vector Control Plan (required if BMPs will not drain in less than 96 hours) ☐ Included with this attachment ☐ Not required

[1] Including Structural BMP Drawdown Calculations and Overflow Design Summary. See BMPDM Chapter 6 and Appendix G for additional design guidance.

8.1 Flow Control Facility Design

Insert Flow Control Facility Design behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.1.

SDHM 3.1

PROJECT REPORT

General Model Information

Project Name:	default
Site Name:	GS Valley Expansion
Site Address:	28435 Lizard Rocks Road
City:	Valley Center
Report Date:	6/9/2020
Gage:	LAKE WOH
Data Start:	10/01/1959
Data End:	09/30/2004
Timestep:	Hourly
Precip Scale:	1.000
Version Date:	2020/04/07

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Predeveloped Land Use

Basin A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C,NatVeg,Flat	0.02
C,Dirt,Flat	0.6
C,Dirt,Moderate	1.02
C,Dirt,Steep	0.16
C,Urban,Flat	0.02
C,Urban,Moderate	0.01
C,Urban,Steep	0.002
Pervious Total	1.832

Impervious Land Use	acre
IMPERVIOUS-FLAT	0.34
IMPERVIOUS-STEEP	0.001
Impervious Total	0.341
Basin Total	2.173

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C,NatVeg,Flat	0.02
C,Dirt,Flat	0.03
C,Dirt,Steep	0.04
C,Urban,Flat	0.1
C,Urban,Moderate	0.06
C,Urban,Steep	0.09
Pervious Total	0.34

Impervious Land Use	acre
IMPERVIOUS-FLAT	1.87
IMPERVIOUS-STEEP	0.003
Impervious Total	1.873
Basin Total	2.213

Element Flows To:

Surface	Interflow	Groundwater
UG Infilt Gallery 1	UG Infilt Gallery 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

UG Infilt Gallery 1

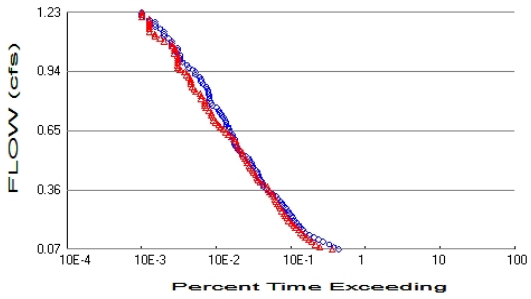
Dimensions
Depth: 5 ft.
Tank Type: Circular
Diameter: 5 ft.
Length: 642.95599084417 ft.
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 54 in.
Notch Type: Rectangular
Notch Width: 0.320 ft.
Notch Height: 0.979 ft.
Orifice 1 Diameter: 1.241 in. Elevation:0 ft.
Element Flows To:
Outlet 1 Outlet 2

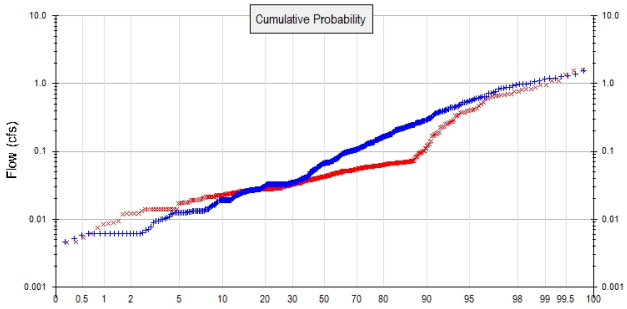
Tank Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.000	0.000	0.000	0.000
0.0556	0.015	0.000	0.009	0.000
0.1111	0.021	0.001	0.013	0.000
0.1667	0.026	0.003	0.017	0.000
0.2222	0.030	0.004	0.019	0.000
0.2778	0.033	0.006	0.022	0.000
0.3333	0.036	0.008	0.024	0.000
0.3889	0.039	0.010	0.026	0.000
0.4444	0.042	0.012	0.027	0.000
0.5000	0.044	0.015	0.029	0.000
0.5556	0.046	0.017	0.031	0.000
0.6111	0.048	0.020	0.032	0.000
0.6667	0.050	0.023	0.034	0.000
0.7222	0.051	0.025	0.035	0.000
0.7778	0.053	0.028	0.036	0.000
0.8333	0.055	0.031	0.038	0.000
0.8889	0.056	0.034	0.039	0.000
0.9444	0.057	0.038	0.040	0.000
1.0000	0.059	0.041	0.041	0.000
1.0556	0.060	0.044	0.042	0.000
1.1111	0.061	0.048	0.044	0.000
1.1667	0.062	0.051	0.045	0.000
1.2222	0.063	0.054	0.046	0.000
1.2778	0.064	0.058	0.047	0.000
1.3333	0.065	0.062	0.048	0.000
1.3889	0.066	0.065	0.049	0.000
1.4444	0.066	0.069	0.050	0.000
1.5000	0.067	0.073	0.051	0.000
1.5556	0.068	0.076	0.052	0.000
1.6111	0.069	0.080	0.053	0.000
1.6667	0.069	0.084	0.054	0.000
1.7222	0.070	0.088	0.054	0.000
1.7778	0.070	0.092	0.055	0.000
1.8333	0.071	0.096	0.056	0.000
1.8889	0.071	0.100	0.057	0.000

1.9444	0.072	0.104	0.058	0.000
2.0000	0.072	0.108	0.059	0.000
2.0556	0.072	0.112	0.059	0.000
2.1111	0.072	0.116	0.060	0.000
2.1667	0.073	0.120	0.061	0.000
2.2222	0.073	0.124	0.062	0.000
2.2778	0.073	0.128	0.063	0.000
2.3333	0.073	0.132	0.063	0.000
2.3889	0.073	0.136	0.064	0.000
2.4444	0.073	0.140	0.065	0.000
2.5000	0.073	0.144	0.066	0.000
2.5556	0.073	0.149	0.066	0.000
2.6111	0.073	0.153	0.067	0.000
2.6667	0.073	0.157	0.068	0.000
2.7222	0.073	0.161	0.069	0.000
2.7778	0.073	0.165	0.069	0.000
2.8333	0.073	0.169	0.070	0.000
2.8889	0.072	0.173	0.071	0.000
2.9444	0.072	0.177	0.071	0.000
3.0000	0.072	0.181	0.072	0.000
3.0556	0.072	0.185	0.079	0.000
3.1111	0.071	0.189	0.102	0.000
3.1667	0.071	0.193	0.131	0.000
3.2222	0.070	0.197	0.167	0.000
3.2778	0.070	0.201	0.207	0.000
3.3333	0.069	0.205	0.250	0.000
3.3889	0.069	0.209	0.297	0.000
3.4444	0.068	0.212	0.346	0.000
3.5000	0.067	0.216	0.397	0.000
3.5556	0.066	0.220	0.450	0.000
3.6111	0.066	0.224	0.505	0.000
3.6667	0.065	0.227	0.561	0.000
3.7222	0.064	0.231	0.618	0.000
3.7778	0.063	0.234	0.676	0.000
3.8333	0.062	0.238	0.735	0.000
3.8889	0.061	0.241	0.794	0.000
3.9444	0.060	0.245	0.853	0.000
4.0000	0.059	0.248	0.913	0.000
4.0556	0.057	0.251	1.539	0.000
4.1111	0.056	0.255	2.682	0.000
4.1667	0.055	0.258	4.161	0.000
4.2222	0.053	0.261	5.911	0.000
4.2778	0.051	0.264	7.893	0.000
4.3333	0.050	0.266	10.08	0.000
4.3889	0.048	0.269	12.44	0.000
4.4444	0.046	0.272	14.98	0.000
4.5000	0.044	0.274	17.66	0.000
4.5556	0.042	0.277	20.47	0.000
4.6111	0.039	0.279	23.40	0.000
4.6667	0.036	0.281	26.43	0.000
4.7222	0.033	0.283	29.55	0.000
4.7778	0.030	0.285	32.73	0.000
4.8333	0.026	0.286	35.97	0.000
4.8889	0.021	0.288	39.25	0.000
4.9444	0.015	0.289	42.55	0.000
5.0000	0.000	0.289	45.85	0.000
5.0556	0.000	0.000	49.15	0.000

Analysis Results
POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 1.832
Total Impervious Area: 0.341

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.34
Total Impervious Area: 1.873

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.714938
5 year	1.050653
10 year	1.230544
25 year	1.393173

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.59684
5 year	0.832101
10 year	1.094262
25 year	1.530371

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0715	1719	1417	82	Pass
0.0832	1482	970	65	Pass
0.0949	1295	855	66	Pass
0.1066	1078	755	70	Pass
0.1183	922	685	74	Pass
0.1300	805	625	77	Pass
0.1417	702	584	83	Pass
0.1534	616	540	87	Pass
0.1652	570	501	87	Pass
0.1769	539	460	85	Pass
0.1886	506	432	85	Pass
0.2003	472	403	85	Pass
0.2120	444	373	84	Pass
0.2237	420	351	83	Pass
0.2354	406	334	82	Pass
0.2471	380	321	84	Pass
0.2588	367	302	82	Pass
0.2705	339	285	84	Pass
0.2822	322	275	85	Pass
0.2939	304	261	85	Pass
0.3056	287	251	87	Pass
0.3174	270	242	89	Pass
0.3291	249	234	93	Pass
0.3408	225	222	98	Pass
0.3525	207	208	100	Pass
0.3642	187	198	105	Pass
0.3759	172	190	110	Pass
0.3876	168	172	102	Pass
0.3993	162	154	95	Pass
0.4110	153	143	93	Pass
0.4227	149	138	92	Pass
0.4344	144	134	93	Pass
0.4461	142	125	88	Pass
0.4578	134	121	90	Pass
0.4696	126	115	91	Pass
0.4813	121	111	91	Pass
0.4930	117	104	88	Pass
0.5047	111	101	90	Pass
0.5164	107	97	90	Pass
0.5281	98	94	95	Pass
0.5398	87	89	102	Pass
0.5515	81	85	104	Pass
0.5632	76	81	106	Pass
0.5749	72	78	108	Pass
0.5866	69	75	108	Pass
0.5983	69	72	104	Pass
0.6100	69	68	98	Pass
0.6217	66	64	96	Pass
0.6335	65	58	89	Pass
0.6452	60	54	90	Pass
0.6569	59	49	83	Pass
0.6686	58	45	77	Pass
0.6803	54	43	79	Pass

0.6920	54	39	72	Pass
0.7037	52	37	71	Pass
0.7154	49	36	73	Pass
0.7271	47	34	72	Pass
0.7388	45	34	75	Pass
0.7505	43	32	74	Pass
0.7622	40	29	72	Pass
0.7739	35	28	80	Pass
0.7857	34	28	82	Pass
0.7974	33	28	84	Pass
0.8091	32	25	78	Pass
0.8208	32	25	78	Pass
0.8325	31	24	77	Pass
0.8442	31	21	67	Pass
0.8559	30	20	66	Pass
0.8676	29	19	65	Pass
0.8793	26	18	69	Pass
0.8910	25	18	72	Pass
0.9027	25	18	72	Pass
0.9144	24	17	70	Pass
0.9261	21	16	76	Pass
0.9379	21	15	71	Pass
0.9496	19	13	68	Pass
0.9613	17	12	70	Pass
0.9730	16	12	75	Pass
0.9847	14	12	85	Pass
0.9964	13	12	92	Pass
1.0081	13	12	92	Pass
1.0198	13	12	92	Pass
1.0315	12	11	91	Pass
1.0432	12	11	91	Pass
1.0549	12	11	91	Pass
1.0666	10	10	100	Pass
1.0783	10	10	100	Pass
1.0901	10	8	80	Pass
1.1018	9	7	77	Pass
1.1135	8	6	75	Pass
1.1252	8	6	75	Pass
1.1369	8	5	62	Pass
1.1486	7	5	71	Pass
1.1603	6	5	83	Pass
1.1720	6	5	83	Pass
1.1837	6	5	83	Pass
1.1954	5	5	100	Pass
1.2071	4	4	100	Pass
1.2188	4	4	100	Pass
1.2305	4	4	100	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

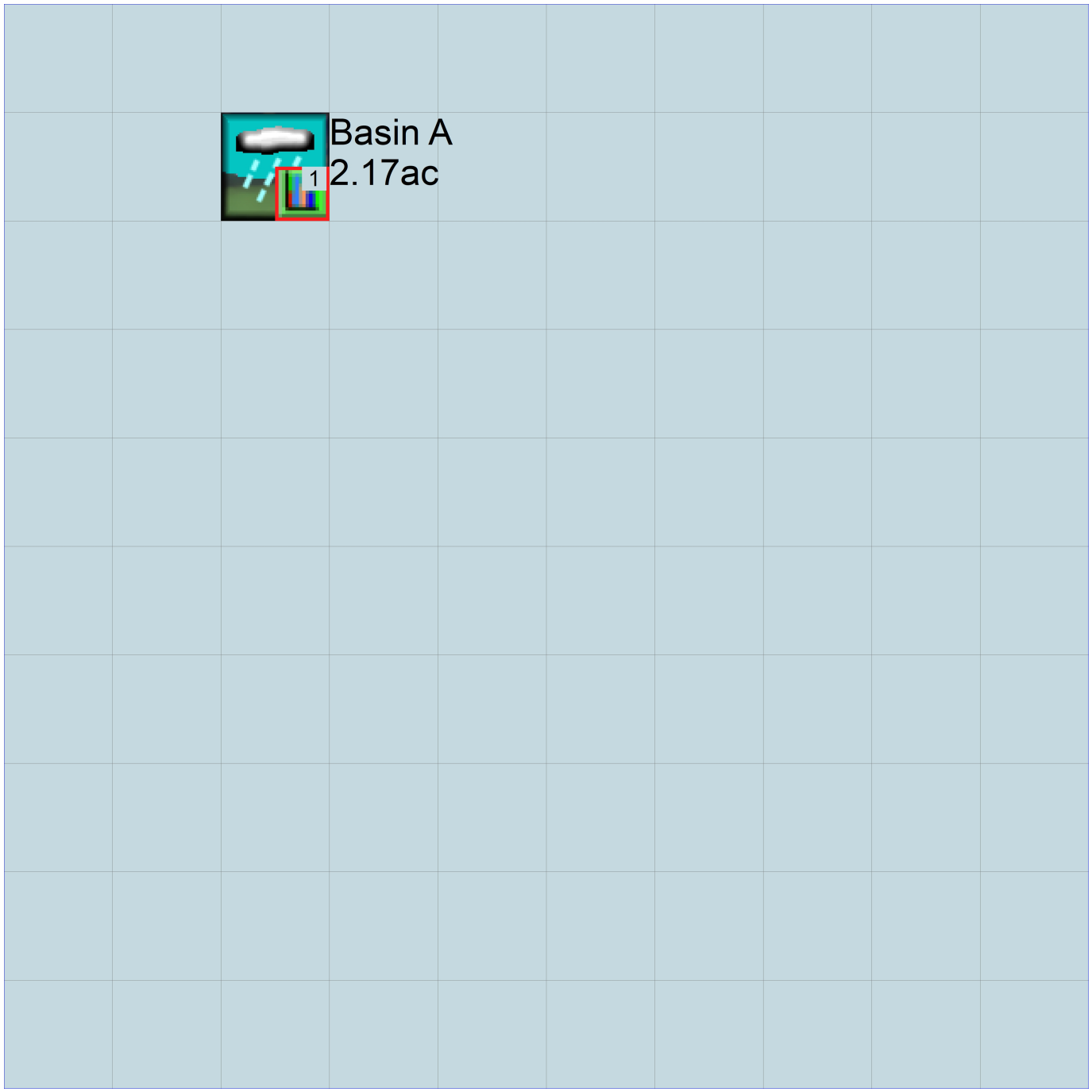
PERLND Changes

No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic

Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01        END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   default.wdm
MESSU       25   Predefault.MES
            27   Predefault.L61
            28   Predefault.L62
            30   POCdefault1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND      19
      PERLND      22
      PERLND      23
      PERLND      24
      PERLND      43
      PERLND      44
      PERLND      45
      IMPLND       1
      IMPLND       3
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin A                    MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out             ***
   19      C,NatVeg,Flat          1    1    1    1   27    0
   22      C,Dirt,Flat            1    1    1    1   27    0
   23      C,Dirt,Moderate        1    1    1    1   27    0
   24      C,Dirt,Steep           1    1    1    1   27    0
   43      C,Urban,Flat           1    1    1    1   27    0
   44      C,Urban,Moderate       1    1    1    1   27    0
   45      C,Urban,Steep          1    1    1    1   27    0
  END GEN-INFO
```

```
*** Section PWATER***

ACTIVITY
  <PLS > ************* Active Sections ****************************
  # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
 19         0    0    1    0    0    0    0    0    0    0    0    0
 22         0    0    1    0    0    0    0    0    0    0    0    0
 23         0    0    1    0    0    0    0    0    0    0    0    0
 24         0    0    1    0    0    0    0    0    0    0    0    0
 43         0    0    1    0    0    0    0    0    0    0    0    0
 44         0    0    1    0    0    0    0    0    0    0    0    0
 45         0    0    1    0    0    0    0    0    0    0    0    0
END ACTIVITY

PRINT-INFO
  <PLS > ***************** Print-flags **************************** PIVL  PYR
  # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
 19         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 22         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 23         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 24         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 43         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 44         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 45         0    0    4    0    0    0    0    0    0    0    0    0    1    9
END PRINT-INFO

PWAT-PARM1
  <PLS >  PWATER variable monthly parameter value flags  ***
  # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
 19         0    1    1    1    0    0    0    0    1    1    0
 22         0    1    1    1    0    0    0    0    1    1    0
 23         0    1    1    1    0    0    0    0    1    1    0
 24         0    1    1    1    0    0    0    0    1    1    0
 43         0    1    1    1    0    0    0    0    1    1    0
 44         0    1    1    1    0    0    0    0    1    1    0
 45         0    1    1    1    0    0    0    0    1    1    0
END PWAT-PARM1

PWAT-PARM2
  <PLS >      PWATER input info: Part 2          ***
  # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR      KVARY      AGWRC
 19              0       3.8     0.035       100      0.05        2.5     0.915
 22              0       3.8     0.035       100      0.05        2.5     0.915
 23              0       3.5     0.033        80       0.1        2.5     0.915
 24              0       3.2      0.03        75      0.15        2.5     0.915
 43              0       3.8      0.04        50      0.05        2.5     0.915
 44              0       3.5     0.035        50       0.1        2.5     0.915
 45              0       3.2      0.03        50      0.15        2.5     0.915
END PWAT-PARM2

PWAT-PARM3
  <PLS >      PWATER input info: Part 3          ***
  # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
 19              0         0         2         2         0      0.05      0.05
 22              0         0         2         2         0      0.05      0.05
 23              0         0         2         2         0      0.05      0.05
 24              0         0         2         2         0      0.05      0.05
 43              0         0         2         2         0      0.05      0.05
 44              0         0         2         2         0      0.05      0.05
 45              0         0         2         2         0      0.05      0.05
END PWAT-PARM3
PWAT-PARM4
  <PLS >     PWATER input info: Part 4                                  ***
  # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
 19              0       0.6      0.04         1       0.3         0
 22              0       0.6     0.017         1       0.3         0
 23              0       0.6     0.017         1       0.3         0
 24              0       0.6     0.017         1       0.3         0
 43              0       0.6      0.03         1       0.3         0
 44              0       0.6      0.03         1       0.3         0
```

```
   45              0       0.6      0.03         1       0.3         0
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   19       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
   22       0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4
   23       0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4
   24       0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4
   43       0.6  0.6  0.6  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.6  0.6
   44       0.6  0.6  0.6  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.6  0.6
   45       0.6  0.6  0.6  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.6  0.6
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   19       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   22       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   23       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   24       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   43       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   44       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   45       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS       GWVS
   19              0         0      0.01         0       0.4      0.01          0
   22              0         0      0.01         0       0.4      0.01          0
   23              0         0      0.01         0       0.4      0.01          0
   24              0         0      0.01         0       0.4      0.01          0
   43              0         0      0.15         0         1      0.05          0
   44              0         0      0.15         0         1      0.05          0
   45              0         0      0.15         0         1      0.05          0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                   in  out           ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
    3      IMPERVIOUS-STEEP       1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    3         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    3         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
    3         0    0    0    0    1
  END IWAT-PARM1
```

```
  IWAT-PARM2
    <PLS >       IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            100      0.05     0.011       0.1
    3            100      0.15     0.011      0.05
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    3              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    3              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                 <--Area-->     <-Target->   MBLK   ***
<Name>   #                 <-factor->     <Name>   #   Tbl#   ***
Basin A***
PERLND  19                       0.02     COPY   501     12
PERLND  19                       0.02     COPY   501     13
PERLND  22                        0.6     COPY   501     12
PERLND  22                        0.6     COPY   501     13
PERLND  23                       1.02     COPY   501     12
PERLND  23                       1.02     COPY   501     13
PERLND  24                       0.16     COPY   501     12
PERLND  24                       0.16     COPY   501     13
PERLND  43                       0.02     COPY   501     12
PERLND  43                       0.02     COPY   501     13
PERLND  44                       0.01     COPY   501     12
PERLND  44                       0.01     COPY   501     13
PERLND  45                      0.002     COPY   501     12
PERLND  45                      0.002     COPY   501     13
IMPLND   1                       0.34     COPY   501     15
IMPLND   3                      0.001     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<----------------><---> User T-series  Engl Metr LKFG             ***
                                        in  out                             ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
```

```
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP
WDM     22 IRRG     ENGL    0.7       SAME PERLND  43     EXTNL  SURLI
WDM     22 IRRG     ENGL    0.7       SAME PERLND  44     EXTNL  SURLI
WDM     22 IRRG     ENGL    0.7       SAME PERLND  45     EXTNL  SURLI

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1959 10 01        END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   default.wdm
MESSU       25   Mitdefault.MES
            27   Mitdefault.L61
            28   Mitdefault.L62
            30   POCdefault1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:60
      PERLND      19
      PERLND      22
      PERLND      24
      PERLND      43
      PERLND      44
      PERLND      45
      IMPLND       1
      IMPLND       3
      RCHRES       1
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Tank  1                     MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   19      C,NatVeg,Flat          1    1    1    1   27    0
   22      C,Dirt,Flat            1    1    1    1   27    0
   24      C,Dirt,Steep           1    1    1    1   27    0
   43      C,Urban,Flat           1    1    1    1   27    0
   44      C,Urban,Moderate       1    1    1    1   27    0
   45      C,Urban,Steep          1    1    1    1   27    0
  END GEN-INFO
```

```
*** Section PWATER***

ACTIVITY
  <PLS > ************ Active Sections ****************************
  # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
 19         0    0    1    0    0    0    0    0    0    0    0    0
 22         0    0    1    0    0    0    0    0    0    0    0    0
 24         0    0    1    0    0    0    0    0    0    0    0    0
 43         0    0    1    0    0    0    0    0    0    0    0    0
 44         0    0    1    0    0    0    0    0    0    0    0    0
 45         0    0    1    0    0    0    0    0    0    0    0    0
END ACTIVITY

PRINT-INFO
  <PLS > ***************** Print-flags **************************** PIVL  PYR
  # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
 19         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 22         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 24         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 43         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 44         0    0    4    0    0    0    0    0    0    0    0    0    1    9
 45         0    0    4    0    0    0    0    0    0    0    0    0    1    9
END PRINT-INFO

PWAT-PARM1
  <PLS >  PWATER variable monthly parameter value flags  ***
  # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
 19         0    1    1    1    0    0    0    0    1    1    0
 22         0    1    1    1    0    0    0    0    1    1    0
 24         0    1    1    1    0    0    0    0    1    1    0
 43         0    1    1    1    0    0    0    0    1    1    0
 44         0    1    1    1    0    0    0    0    1    1    0
 45         0    1    1    1    0    0    0    0    1    1    0
END PWAT-PARM1

PWAT-PARM2
  <PLS >      PWATER input info: Part 2         ***
  # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
 19              0       3.8     0.035       100      0.05       2.5     0.915
 22              0       3.8     0.035       100      0.05       2.5     0.915
 24              0       3.2      0.03        75      0.15       2.5     0.915
 43              0       3.8      0.04        50      0.05       2.5     0.915
 44              0       3.5     0.035        50       0.1       2.5     0.915
 45              0       3.2      0.03        50      0.15       2.5     0.915
END PWAT-PARM2

PWAT-PARM3
  <PLS >      PWATER input info: Part 3         ***
  # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
 19              0         0         2         2         0      0.05      0.05
 22              0         0         2         2         0      0.05      0.05
 24              0         0         2         2         0      0.05      0.05
 43              0         0         2         2         0      0.05      0.05
 44              0         0         2         2         0      0.05      0.05
 45              0         0         2         2         0      0.05      0.05
END PWAT-PARM3
PWAT-PARM4
  <PLS >     PWATER input info: Part 4                          ***
  # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
 19              0       0.6      0.04         1       0.3         0
 22              0       0.6     0.017         1       0.3         0
 24              0       0.6     0.017         1       0.3         0
 43              0       0.6      0.03         1       0.3         0
 44              0       0.6      0.03         1       0.3         0
 45              0       0.6      0.03         1       0.3         0
END PWAT-PARM4
MON-LZETPARM
  <PLS >      PWATER input info: Part 3         ***
  # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
 19       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
```

```
   22       0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4
   24       0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4  0.4
   43       0.6  0.6  0.6  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.6  0.6
   44       0.6  0.6  0.6  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.6  0.6
   45       0.6  0.6  0.6  0.6  0.7  0.7  0.7  0.7  0.7  0.6  0.6  0.6
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   19       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
   22       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   24       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   43       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   44       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
   45       0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   19             0         0      0.01         0       0.4      0.01         0
   22             0         0      0.01         0       0.4      0.01         0
   24             0         0      0.01         0       0.4      0.01         0
   43             0         0      0.15         0         1      0.05         0
   44             0         0      0.15         0         1      0.05         0
   45             0         0      0.15         0         1      0.05         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
    3      IMPERVIOUS-STEEP       1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    3         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    3         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
    3         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            100      0.05     0.011       0.1
    3            100      0.15     0.011      0.05
  END IWAT-PARM2

  IWAT-PARM3
```

```
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    3              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    3              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                   <--Area-->     <-Target->   MBLK   ***
<Name>   #                   <-factor->     <Name>   #   Tbl#   ***
Basin A***
PERLND  19                         0.02     RCHRES   1      2
PERLND  19                         0.02     RCHRES   1      3
PERLND  22                         0.03     RCHRES   1      2
PERLND  22                         0.03     RCHRES   1      3
PERLND  24                         0.04     RCHRES   1      2
PERLND  24                         0.04     RCHRES   1      3
PERLND  43                          0.1     RCHRES   1      2
PERLND  43                          0.1     RCHRES   1      3
PERLND  44                         0.06     RCHRES   1      2
PERLND  44                         0.06     RCHRES   1      3
PERLND  45                         0.09     RCHRES   1      2
PERLND  45                         0.09     RCHRES   1      3
IMPLND   1                         1.87     RCHRES   1      5
IMPLND   3                        0.003     RCHRES   1      5

******Routing******
PERLND  19                         0.02     COPY     1     12
PERLND  22                         0.03     COPY     1     12
PERLND  24                         0.04     COPY     1     12
PERLND  43                          0.1     COPY     1     12
PERLND  44                         0.06     COPY     1     12
PERLND  45                         0.09     COPY     1     12
IMPLND   1                         1.87     COPY     1     15
IMPLND   3                        0.003     COPY     1     15
PERLND  19                         0.02     COPY     1     13
PERLND  22                         0.03     COPY     1     13
PERLND  24                         0.04     COPY     1     13
PERLND  43                          0.1     COPY     1     13
PERLND  44                         0.06     COPY     1     13
PERLND  45                         0.09     COPY     1     13
RCHRES   1                            1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
    1     Tank  1                1    1    1    1   28    0    1
  END GEN-INFO
```

```
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                       ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50        ***
  <------><--------><--------><--------><--------><--------><-------->        ***
    1              1      0.12       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit       for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1            0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   91    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.000000  0.000000  0.000000
  0.055556  0.015472  0.000574  0.009851
  0.111111  0.021757  0.001619  0.013931
  0.166667  0.026495  0.002964  0.017062
  0.222222  0.030418  0.004548  0.019701
  0.277778  0.033810  0.006334  0.022027
  0.333333  0.036819  0.008298  0.024129
  0.388889  0.039531  0.010420  0.026062
  0.444444  0.042005  0.012686  0.027862
  0.500000  0.044281  0.015083  0.029552
  0.555556  0.046387  0.017602  0.031151
  0.611111  0.048346  0.020235  0.032671
  0.666667  0.050175  0.022972  0.034124
  0.722222  0.051888  0.025807  0.035517
  0.777778  0.053496  0.028735  0.036858
  0.833333  0.055008  0.031750  0.038152
  0.888889  0.056432  0.034846  0.039403
  0.944444  0.057775  0.038018  0.040615
  1.000000  0.059041  0.041264  0.041793
  1.055556  0.060236  0.044577  0.042938
  1.111111  0.061364  0.047955  0.044054
  1.166667  0.062429  0.051394  0.045141
  1.222222  0.063433  0.054891  0.046204
  1.277778  0.064380  0.058441  0.047242
  1.333333  0.065272  0.062043  0.048258
  1.388889  0.066112  0.065693  0.049253
  1.444444  0.066900  0.069388  0.050229
```

```
  1.500000  0.067640  0.073125  0.051186
  1.555556  0.068332  0.076903  0.052125
  1.611111  0.068979  0.080717  0.053048
  1.666667  0.069580  0.084566  0.053954
  1.722222  0.070139  0.088447  0.054846
  1.777778  0.070655  0.092358  0.055724
  1.833333  0.071129  0.096297  0.056588
  1.888889  0.071562  0.100261  0.057439
  1.944444  0.071956  0.104248  0.058277
  2.000000  0.072310  0.108255  0.059104
  2.055556  0.072626  0.112281  0.059919
  2.111111  0.072903  0.116324  0.060724
  2.166667  0.073142  0.120381  0.061517
  2.222222  0.073344  0.124450  0.062301
  2.277778  0.073509  0.128530  0.063075
  2.333333  0.073637  0.132617  0.063840
  2.388889  0.073728  0.136711  0.064595
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  2.555556  0.073783  0.149008  0.066811
  2.611111  0.073728  0.153106  0.067533
  2.666667  0.073637  0.157199  0.068247
  2.722222  0.073509  0.161287  0.068955
  2.777778  0.073344  0.165366  0.069655
  2.833333  0.073142  0.169436  0.070348
  2.888889  0.072903  0.173493  0.071034
  2.944444  0.072626  0.177535  0.071714
  3.000000  0.072310  0.181561  0.072387
  3.055556  0.071956  0.185569  0.079813
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  3.444444  0.068332  0.212914  0.346201
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  3.611111  0.066112  0.224124  0.505329
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  3.777778  0.063433  0.234926  0.676442
  3.833333  0.062429  0.238422  0.735114
  3.888889  0.061364  0.241861  0.794296
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  4.000000  0.059041  0.248553  0.913547
  4.055556  0.057775  0.251798  1.539584
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  4.166667  0.055008  0.258067  4.161902
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  4.333333  0.050175  0.266845  10.07994
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  4.500000  0.044281  0.274733  17.66482
  4.555556  0.042005  0.277131  20.47805
  4.611111  0.039531  0.279397  23.40747
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  4.722222  0.033810  0.283482  29.55327
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  4.833333  0.026495  0.286852  35.97774
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  4.944444  0.015472  0.289242  42.55343
  5.000000  0.001000  0.289817  45.85744
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
```

```
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP
WDM     22 IRRG     ENGL    0.7       SAME PERLND  43     EXTNL  SURLI
WDM     22 IRRG     ENGL    0.7       SAME PERLND  44     EXTNL  SURLI
WDM     22 IRRG     ENGL    0.7       SAME PERLND  45     EXTNL  SURLI

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1001 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     12.1      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       16
RCHRES     ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK   16


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages.

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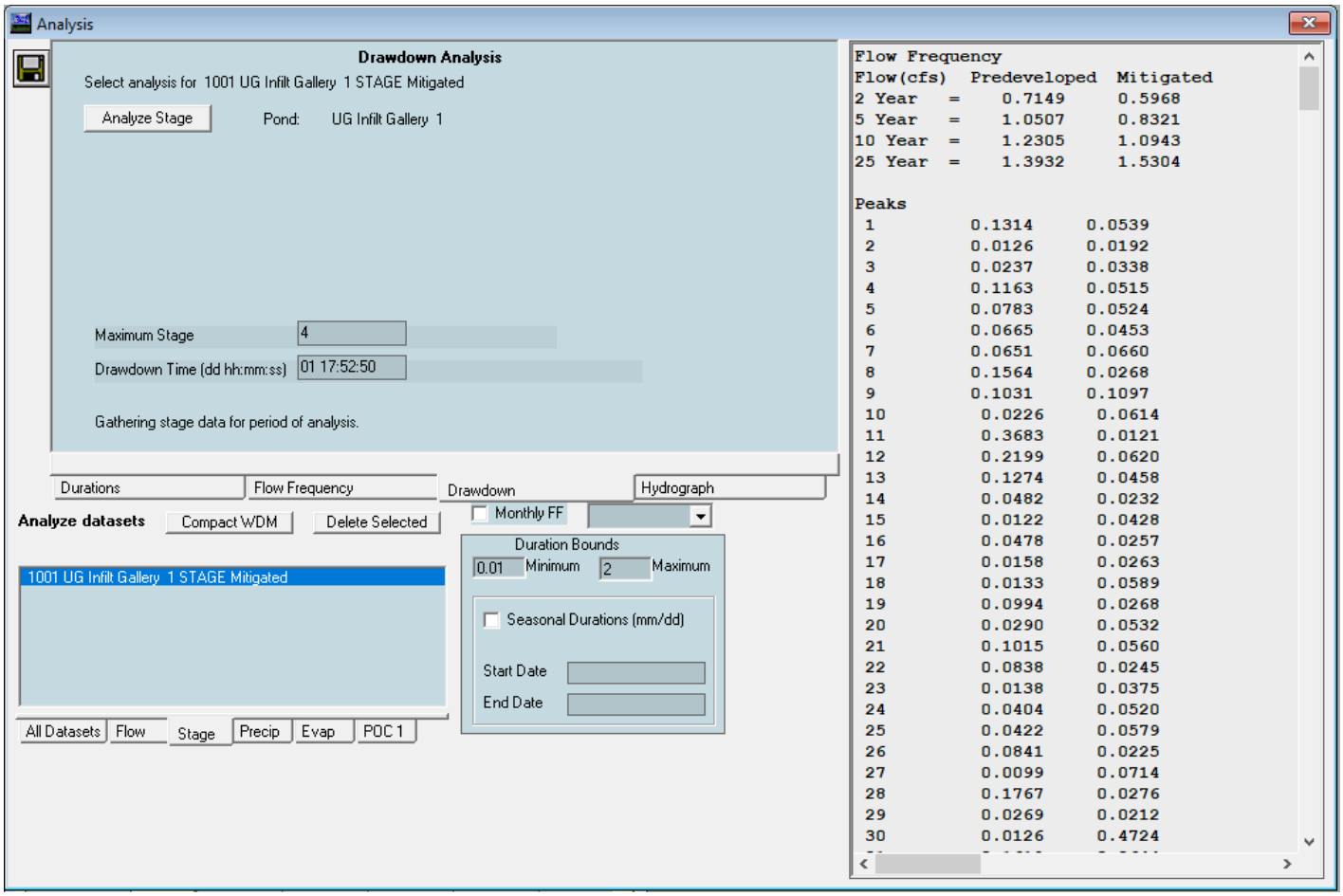

Analysis
Drawdown Analysis
Select analysis for 1001 UG Infilt Gallery 1 STAGE Mitigated
Analyze Stage
Pond: UG Infilt Gallery 1
Maximum Stage
4
Drawdown Time (dd hh:mm:ss)
01 17:52:50
Gathering stage data for period of analysis.
Durations
Flow Frequency
Drawdown
Hydrograph
Analyze datasets
Compact WDM
Delete Selected
Monthly FF
1001 UG Infilt Gallery 1 STAGE Mitigated
Duration Bounds
0.01
Minimum
2
Maximum
Seasonal Durations (mm/dd)
Start Date
End Date
All Datasets
Flow
Stage
Precip
Evap
POC 1
Flow Frequency
Flow(cfs) Predeveloped Mitigated
2 Year = 0.7149 0.5968
5 Year = 1.0507 0.8321
10 Year = 1.2305 1.0943
25 Year = 1.3932 1.5304
Peaks
1 0.1314 0.0539
2 0.0126 0.0192
3 0.0237 0.0338
4 0.1163 0.0515
5 0.0783 0.0524
6 0.0665 0.0453
7 0.0651 0.0660
8 0.1564 0.0268
9 0.1031 0.1097
10 0.0226 0.0614
11 0.3683 0.0121
12 0.2199 0.0620
13 0.1274 0.0458
14 0.0482 0.0232
15 0.0122 0.0428
16 0.0478 0.0257
17 0.0158 0.0263
18 0.0133 0.0589
19 0.0994 0.0268
20 0.0290 0.0532
21 0.1015 0.0560
22 0.0838 0.0245
23 0.0138 0.0375
24 0.0404 0.0520
25 0.0422 0.0579
26 0.0841 0.0225
27 0.0099 0.0714
28 0.1767 0.0276
29 0.0269 0.0212
30 0.0126 0.4724

Calculation of lower and upper HMP thresholds based on USGS regional equations

The lower and upper thresholds can be changed based on the following USGS regional regression equations:

$Q2 = 3.60 \times (A^{0.672}) \times (P^{0.753})$

$Q10 = 6.56 \times (A^{0.783}) \times (P^{1.07})$

Where A = drainage area (sq. miles)

P = mean annual precipitation (inches)

Mean annual precipitation values for the standard 18 San Diego County rain gages are shown in the table below.

Rain Gage	Mean Annual Rainfall (in)
Bonita	8.9
Borrego	3.2
CCDA Lindbergh	9.9
Encinitas	10.3
Escondido	13.9
Fallbrook	15.3
Fashion Valley	10.4
Flinn Springs	13.2
Kearny Mesa	11.1
Lake Cuyamaca	30.9
Lake Henshaw	22.4
Lake Wohlford	17.0
Lower Otay	10.5
Oceanside	11.8
Poway	12.2
Ramona	14.4
San Onofre	11.6
San Vicente	12.7
Santee	13.1

Using the Lake Wohlford mean annual rainfall of 17.0 inches:

- Basin A (Drainage Management Area DMA "A")
  A = 6.10 acres = 0.009531 square miles
  P = 17.0 inches
  ⇨ USGS Q2 = 1.333 cfs
  USGS Q10 = 3.558 cfs

- Basin C (Drainage Management Area DMA "C")
  A = 5.21 acres = 0.008141 square miles
  P = 17.0 inches
  ⇨ USGS Q2 = 1.199 cfs
  USGS Q10 = 3.144 cfs

Compare sets of threshold values

Use the set of Q2 and Q10 values that produces the smallest sized stormwater facility. The larger Q2 value will produce the smaller facility because with the larger Q2, more stormwater can be discharged before reaching the lower threshold value. Therefore, less water needs to be stored prior to discharge at the POC.

- Basin A

  The Predeveloped Q2 and Q10 values calculated are:

  Pre Q2 = 1.9269 cfs

  Pre Q10 = 3.2990 cfs

  The USGS Q2 and Q10 values calculated earlier are:

  USGS Q2 = 0.672 cfs

  USGS Q10 = 1.601 cfs

  Values to be used are the default lower and upper thresholds:

  Lower threshold = 10% of Pre Q2 = 0.1927 cfs

  Upper threshold = Pre Q10 = 3.2990 cfs

- Basin C

  The Predeveloped Q2 and Q10 values calculated are:

  Pre Q2 = 2.1858 cfs

  Pre Q10 = 3.4407 cfs

  The USGS Q2 and Q10 values calculated earlier are:

  USGS Q2 = 1.199 cfs

  USGS Q10 = 3.144 cfs

  Values to be used are the default lower and upper thresholds:

  Lower threshold = 10% of Pre Q2 = 0.2186 cfs

  Upper threshold = Pre Q10 = 3.4407 cfs

8.2 Hydromodification Management Points of Compliance

- List and describe all points of compliance (POCs) for flow control for hydromodification management.
- For each POC, provide a POC identification name or number, and a receiving channel identification name or number correlating to the project's HMP Exhibit (see Attachment 2).

POC name or #	Channel name or #	POC Description
POC #1	Existing dissipater per SDRSD D-40 (Type 2)	POC #1 receives stormwater generated in DMA-A and Stormwater generated in DMA-B POC #1 is an existing dissipater located at the southwest corner of Lizard Rocks Road per Improvement Plan No. CG 4646. Stormwater from DMA-A is conveyed through proposed underground storm drain pipes on the project site and that connects downstream to the existing drainage inlet catch basin on the southeast corner of Lizard Rocks Road. This existing drainage inlet catch basin discharges into a proposed 24" RCP storm drain, and westerly into a proposed drainage inlet catch basin adjacent to POC #1, the existing dissipater. Based on Improvement Plan No. CG 4646, it is evident that stormwater from DMA-A is intended to overflow from the drainage inlet catch basin prior to discharging into POC #1, the existing dissipater. Stormwater from DMA-B is overflown from an existing onsite discharge basin constructed per Grading Plan No. L-14940. The site is graded to drain northerly above ground, offsite to the south end of Lizard Rocks Road and into the existing drainage inlet catch basin adjacent to POC #1, the existing dissipater.
POC #2	Existing 12" PVC outlet to existing Concrete Channel/Brow Ditch	POC #2 receives stormwater generated in DMA-C and DMA-D. POC #2 is located at the southwest corner of the Project Site and is an existing 12" PVC that outlets into an existing Brow Ditch per Grading Plan No. L-14940. The receiving channel is an existing concrete channel per Plan No. L-1960 that discharges into Cole Grade Road.

8.3 Geomorphic Assessment of Receiving Water Channels

Insert Geomorphic Assessment behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.3.

8.4 Vector Control Plan

Insert Vector Control Plan behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.4.

9.0 General Requirements

- Complete the table below to indicate which compliance pathway was selected in PDP SWQMP Table 6. Include the corresponding sub-attachment with your SWQMP submittal. Other sub-attachments do not need to be included.
- See the BMPDM sections and appendices listed under "BMPDM Design Resources" for additional explanation of design requirements. Constructed features must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: CCSYAs and applicable BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.

Sub-attachments	BMPDM Design Resources
☐ **9.1: Documentation of Hydromodification Management Exemption**[1]	Section 1.6
☒ **9.2: Watershed Management Area Analysis (WMAA) Mapping**[1]	Appendix H.1.1.2
☐ **9.3: Resource Protection Ordinance (RPO) Methods**	Appendix H.1.1.1
☐ **9.4: No Net Impact Analysis**	Appendix H.4

[1] The San Diego County Regional comprehensive WMAA mapping data can be found on the Project Clean Water website here: http://www.projectcleanwater.org/download/wmaa_attc_data/

9.1 Documentation of Hydromodification Management Exemption (BMPDM Section 1.6)

- If the PDP is exempt from hydromodification management requirements (see Table 4 Part A.1 of the PDP SWQMP), use this Sub-attachment to document the exemption.
- Select the type of exemption below that applies and provide an explanation of the selection, including maps or other applicable documentation. Additional documentation may be requested by County staff.

Exemption Type per BMPDM Figure 1-2 (select one)

☐ a. The proposed project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐ b. The proposed project will discharge runoff directly to conveyance channels whose bed and bank are concrete lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐ c. The proposed project will discharge runoff directly to an area identified by the County as appropriate for an exemption by the WMAA for the watershed in which the project resides[2].

Explanation (add or attach pages as necessary)

[2] This option must include an analysis of the project using the methodology presented in Attachment E of the Regional Watershed Management Area Analysis.

9.2 Watershed Management Area Analysis (WMAA) Mapping (BMPDM Appendix H.1.1.2)

Watershed Management Area Analysis (WMAA) mapping is a simple way to screen projects to determine the presence of onsite or offsite upstream Potential Critical Coarse Sediment Yield Areas (PCCSYAs). The San Diego County Regional WMAA mapping data can be found on the Project Clean Water website here: http://www.projectcleanwater.org/download/wmaa_attc_data/ .[3]

- Based on the WMAA map and the proposed project design, demonstrate below that both of the following conditions apply to the PDP:

  (a) Less than 5% of PCCSYAs will be impacted (built on or obstructed) by the PDP, and

  (b) All upstream offsite PCCYSAs will be bypassed (see BMPDM Appendix H.3).

A. Mapping Results -- At a minimum, show: (1) the project footprint, (2) areas of proposed development, (3) impacted onsite PCCSYAs, (4) offsite tributary areas[4], and (5) bypass of upstream offsite PCCSYAs.

Project footprint is shown below. Proposed development is located on the north portion of the site that is currently occupied by residential structures. There is no onsite PCCSYA. Offsite tributary area is shown on the map below. A concrete gutter is proposed along the easterly property line to intercept offsite runoff and bypass upstream offsite PCCSYAs. The bypass area is the northerly portion of the offsite tributary area as shown..

[3] Applicants may refine initial mapping results using options identified in BMPDM Appendix H.1.2.
[4] Tributary areas must be shown to demonstrate that upstream offsite PCCSYAs do not exist. If bypassing these areas, only the bypass should be shown.

B. Explanation -- Provide documentation as needed to demonstrate that (1) impacts to PCCSYAs are below 5%, and (2) upstream offsite PCCYSAs are effectively bypassed. Add pages as necessary.

No onsite PCCSYA is documented on the WMAA mapping; however, the vacant property northeast of the project site drains onto the project site as well as PCCYSAs. A concrete ditch is proposed near the easterly property line to intercept offsite run-on. The concrete ditch will also intercept upstream offsite PCCYSAs and direct the run-on and PCCYSAs towards the south lot which has been developed with concrete gutter and underground storm drain system. The PCCYSAs and run-on end up in the existing concrete ditch located parallel to the southerly property line that outflows into Cole Grade Road.

In the existing condition, upstream offsite PCCYSAs are carried into the existing bioswale along the east side of Lizard Rocks Road prior to entering the storm drain system and discharged into the vacant land across the street. The vacant land slopes down from the east to west, draining the discharge overland into Cole Grade Road, which is ultimately the same as in the proposed condition discharging into the same watershed. Therefore, upstream offsite PCCYSAs are considered effectively bypassed.

9.3 Resource Protection Ordinance (RPO) Methods (BMPDM Appendix H.1.1.1)

- Either of two Resource Protection Ordinance (RPO) methods may also be used to demonstrate compliance with CCSYA requirements. Select either option and document the selection below:

☐ **RPO Scenario 1: PDP is subject to and in compliance with RPO requirements**[5]

- **Select** if the project requires one or more discretionary permits;
- **Demonstrate** that onsite AND upstream offsite CCSYAs will be avoided and/or bypassed.

☐ **RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements**[6]

- **Select** if the project does not require discretionary permits;
- **Demonstrate** that all upstream offsite CCSYAs will be bypassed[7].

A. Mapping Results -- At a minimum, show as applicable: (1) the project footprint, (2) areas of proposed development, (3) locations of onsite and upstream offsite CCSYAs, and (4) bypass of all identified CCSYAs.

[5] RPO applicability is normally confirmed during discretionary review. Check with your project manager if you're not sure of your status.
[6] Does not include PDPs utilizing exemption(s) via RPO Section 86.604(e)(2)(cc) or 86.604(e)(3).
[7] This scenario does not impose requirements for onsite CCSYAs.

B. Explanation -- Provide documentation as needed to demonstrate that (1) onsite CCSYAs are avoided and bypassed [if applicable], and (2) upstream offsite CCYSAs are effectively bypassed. Add pages as necessary.

9.4 No Net Impact Analysis (BMPDM Appendix H.4)

- When impacts to CCSYAs cannot be avoided or effectively bypassed, applicants must demonstrate that their project generates no net impact to the receiving water per the performance metrics identified in BMPDM Appendix H.4.
- Use the space below to document that the PDP will generate no net impact to any receiving water.

No Net Impact Analysis (add or attach pages as necessary)

This form must be accepted by the County prior to the release of construction permits or granting of occupancy for applicable portions of a Priority Development Project (PDP). Its purpose is to provide documentation of the final installation of permanent Best Management Practices (BMPs) used to satisfy Structural Performance Standards for the development project. Compliance with these standards reduces the discharge of pollutants and flows from the completed project site. Applicable standards may be satisfied using Structural BMPs (S-BMPs), Significant Site Design BMPs (SSD-BMPs), or both. Applicants are responsible for providing all requested information. Do not leave any fields blank; indicate *N/A* for any requested item that is not applicable.

PART 1 General Project and Applicant Information

Table 1: Project and Applicant Information

A. Project Summary Information	**ID No. IVF-20___-____ To be assigned by DPW-WPP**
Project Name	GS Valley Expansion
Record ID (e.g. grading/improvement plan number, building permit)	Click here to enter text.
Project Address	28435 Lizard Rocks Road, Valley Center, CA
Assessor's Parcel Number(s) APN(s)	188-250-15-00 and 188-250-41-00
Project Watershed (complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	San Luis Rey Hydrologic Unit, Lower San Luis Hydrologic Area, Rincon Hydrologic Subarea
B. Owner Information	
Name	Greens Valley Center, LLC (Contact: Neil Kadakia)
Address	910 South El Camino Real, Suite 100, San Clemente, CA 92672
Email Address	neil@greensglobal.com
Phone Number	(949) 546-0563

****THIS PAGE IS FOR PARTIAL RECORD PLAN VERIFICATIONS ONLY ****

If this is a partial Installation Verification Form submittal, list ALL DMAs and BMPs for the Priority Development Project in **Table 2**. Provide acceptance information where applicable.

Table 2: Information for Partial IVF Submittals

A: DMA and BMP Information

DMA #	Structural and Significant Site Design BMPs	WPP Acceptance Date	IVF ID No. (e.g. 2018-001)

B: DMA and BMP Map

Please attach a map showing (1) all DMAs for the project site, (2) the DMAs and/or lots accepted under previous Verification Forms, and (3) the locations of Structural BMPs and Significant Site Design BMPs previously accepted.

SAMPLE DMA MAP

PART 2 DMA and BMP Inventory Information

Use this table to document Structural BMPs (S-BMPs) and Significant Site Design BMPs (SSD-BMPs) for the PDP. All DMAs that are not self-mitigating or de minimis must have at least one Structural BMP or Significant Site Design BMP.

- In **Part A**, list all Structural BMPs (including both Pollutant Control and/or Hydromodification as applicable) by DMA.
- Complete **Part B** for all DMAs that contain only Significant Site Design BMPs. SSD-BMPs are Site Design BMPs (SD-BMPs) that are sized and constructed to satisfy Structural Performance Standards for a DMA.
- Documentation of SD-BMPs is not required in this table for any DMA that also contains S-BMPs.
- The information provided for each BMP in the table must match that provided in the Stormwater Quality Management Plan (SWQMP), construction plans, maintenance agreements, and other relevant project documentation.

Table 3: Required Information for Structural BMPs and Significant Site Design BMPs

DMA #	BMP Information			Maintenance Category	Maintenance Agreement or Maintenance Notification Recorded Doc. #	Construction Plan Sheet #	Landscape Plan # & Sheet # (For Vegetated BMPs Only)	FOR DPW-WPP USE ONLY *Reviewer concurs that the BMP(s) may be accepted into inventory (date and initial)*
	Quantity	Description/Type of Structural BMP	BMP ID #(s)					
Part A Structural BMPs (S-BMPs)								
A	1	Existing Bioretention	1	4				
A	1	MWS unit (Proprietary Biofiltration)	2	2				
C	1	MWS unit (Proprietary Biofiltration)	3	2				
A	1	Hydromodification Management (Detention Vault)	4	2				
C	1	Hydromodification Management (Detention Vault)	5	2				
B	1	Hydromodification Management (Existing Detention Vault)	6	2				

B	4	Existing Media Filter Drain Insert	7-10	2				
C	7	Existing Media Filter Drain Insert	11-17	2				
A	1	CDS Unit	18	2				
C	1	CDS Unit	19	2				
Add rows as needed								
Part B Significant Site Design BMPs (SSD-BMPs)								
		Choose an item.		---	---			
		Choose an item.		---	---			
		Choose an item.		---	---			
Add rows as needed								

PART 3 Required Attachments for All BMPs Listed in Table 3

For ALL projects, submit the following to the County inspector (check all that are attached):

☐ Photographs: Labeled photographs illustrating proper construction of each S-BMP or SSD-BMP.

☐ Maintenance Agreements: Copies of all approved and recorded Storm Water Maintenance Agreements (SWMAs) or Maintenance Notifications (MNs) for all S-BMPs.

Note: All BMPs proposed for County ownership will remain the responsibility of the owner listed on **Page 1** until a signed Letter of Acceptance of Completion is received by the DPW Watershed Protection Program.

For Grading and Improvement projects only, ALSO submit:

☒ Construction Plans: An 11" X 17" copy of the most current applicable approved Construction Plan sheets:

- ☒ Grading Plans, AND/OR
- ☐ Improvement Plans, AND/OR
- ☐ Precise Grading Plan(s) (only for residential subdivisions with tract homes), AND/OR
- ☐ Other (Please specify) Click here to enter text.

Note: For each Construction Plan, the sheets submitted must incorporate all of the following:

- ☐ A BMP Table, AND
- ☐ A plan/cross-section of each verified as-built BMP, AND
- ☐ The location of each verified as-built BMP

☐ Landscape Plans: An 11" X 17" copy of the most current applicable Landscape Plan sheets where the BMPs are required to be vegetated, including:

- ☐ The Certification of Completion (Form 407), AND
- ☐ The Certificate of Approval from PDS Landscape Architect

Note: For each Landscape Plan, the sheets submitted must show the location of each verified as-built BMP.

Required only for Verifications for Partial Record Plans

☐ If this is a partial record plan verification, please include the following:

- ☐ A list of previously submitted Verification Forms (**Table 2, A**)
- ☐ A map of DMAs and BMPs (**Table 2, B**)

PART 4 Preparer's Certification

By signing below, I certify that the BMP(s) listed in Table 3 of this Verification Form have been constructed and all are in substantial conformance with the approved plans and applicable regulations. I understand the County reserves the right to inspect the above BMPs to verify compliance with the approved plans and Watershed Protection Ordinance (WPO). Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Note: Structural BMPs (Table 3, Part A) must be certified by a licensed professional engineer.

Please sign and, if applicable, provide your seal below.

[SEAL]

Preparer's Printed Name:

____Gregory Cooke_____

Email: _gcooke@drc-eng.com_____

Phone Number: _(714) 685-6860 x 331_____

Preparer's Signed Name:

_____

Date: Click here to enter text.

COUNTY - OFFICIAL USE ONLY:

For County Inspectors

County Department: _____

Date verification received from EOW: _____

By signing below, County Inspector concurs that every noted BMP has been installed per plan.

Inspector Name: _____

Inspector's Signature: _____ Date: _____

For Building Division Only

Inspection Supervisor Name: _____

Inspector Supervisor's Signature: _____ Date: _____

PDCI & Building, along with the rest of this package, please provide to DPW WPP:

☐ A copy of the final accepted SWQMP and any accepted addendum

For Watershed Protection Program Only

Date Received: _____

WPP Reviewer: _____

WPP Reviewer concurs that the BMPs accepted in **Part 2** above may be entered into inventory.

WPP Reviewer's Signature: _____ Date: _____

11.0 Cover Sheet and General Requirements

- All Structural BMPs must have a plan and mechanism to ensure on-going maintenance. Use the table below to document the types of agreements to be submitted for the PDP and submit them under cover of this sheet.
- See BMPDM Section 7.3 for a description of maintenance categories and responsibilities. Note that since Category 3 and 4 BMPs are County-maintained, they do not require maintenance agreements.

a. Applicability of Maintenance Agreements

Check the boxes below to indicate which types of agreements are included with this attachment.

☒ Maintenance Notification (Category 1 BMPs)

- Exhibit A: Project Site Vicinity; Project Site Map; and a map for each BMP and its Drainage Management Area
- Exhibit B: BMP Maintenance Plan (see below)

☒ Stormwater Maintenance Agreement (Category 2 BMPs)

- Exhibit A: Legal Description of Property
- Exhibit B: BMP Maintenance Plan (see below)
- Exhibit C: Project Site Vicinity Map

Maintenance agreement templates and instructions are provided on the County's website:

www.sandiegocounty.gov/stormwater under the Development Resources tab.

PDP applicants contact County staff to ensure they have the most current forms.

b. Maintenance Plan Requirements

Use this checklist to confirm that each maintenance plan includes the following that as applicable.

☒ Specific **maintenance indicators and actions** for proposed structural BMP(s). These must be based on based on maintenance indicators presented in BMP Design Fact Sheets in Appendix E and enhanced to reflect actual proposed components of the structural BMP(s).

☒ **Access** to inspect and perform maintenance on the structural BMP(s).

☒ Features to **facilitate inspection** (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).

☒ Manufacturer and part number for **proprietary parts** of structural BMP(s) when applicable.

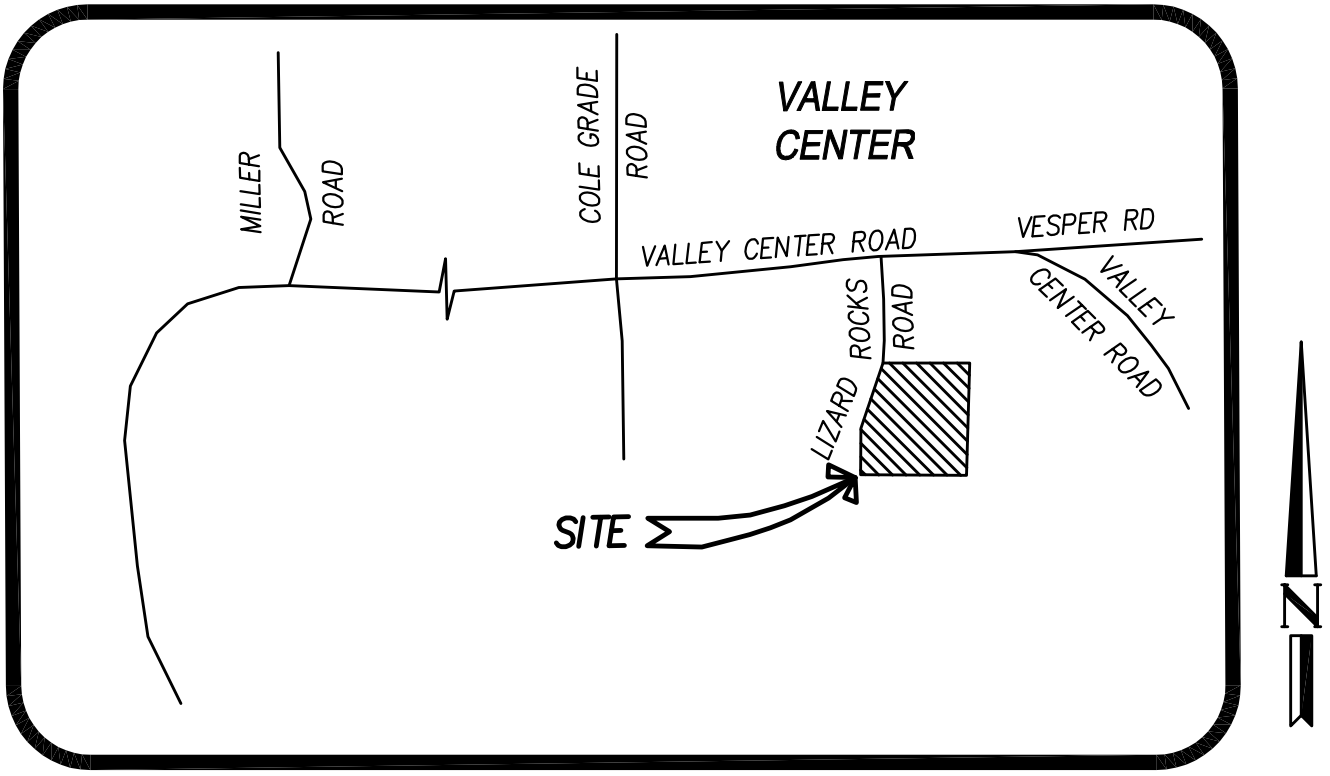
☒ **Maintenance thresholds** specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP).

☒ Recommended **equipment** to perform maintenance.

☒ When applicable, necessary special **training or certification** requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.

Maintenance Notification
(Category 1 BMPs)

EXHIBIT "A"



VICINITY MAP
NOT TO SCALE

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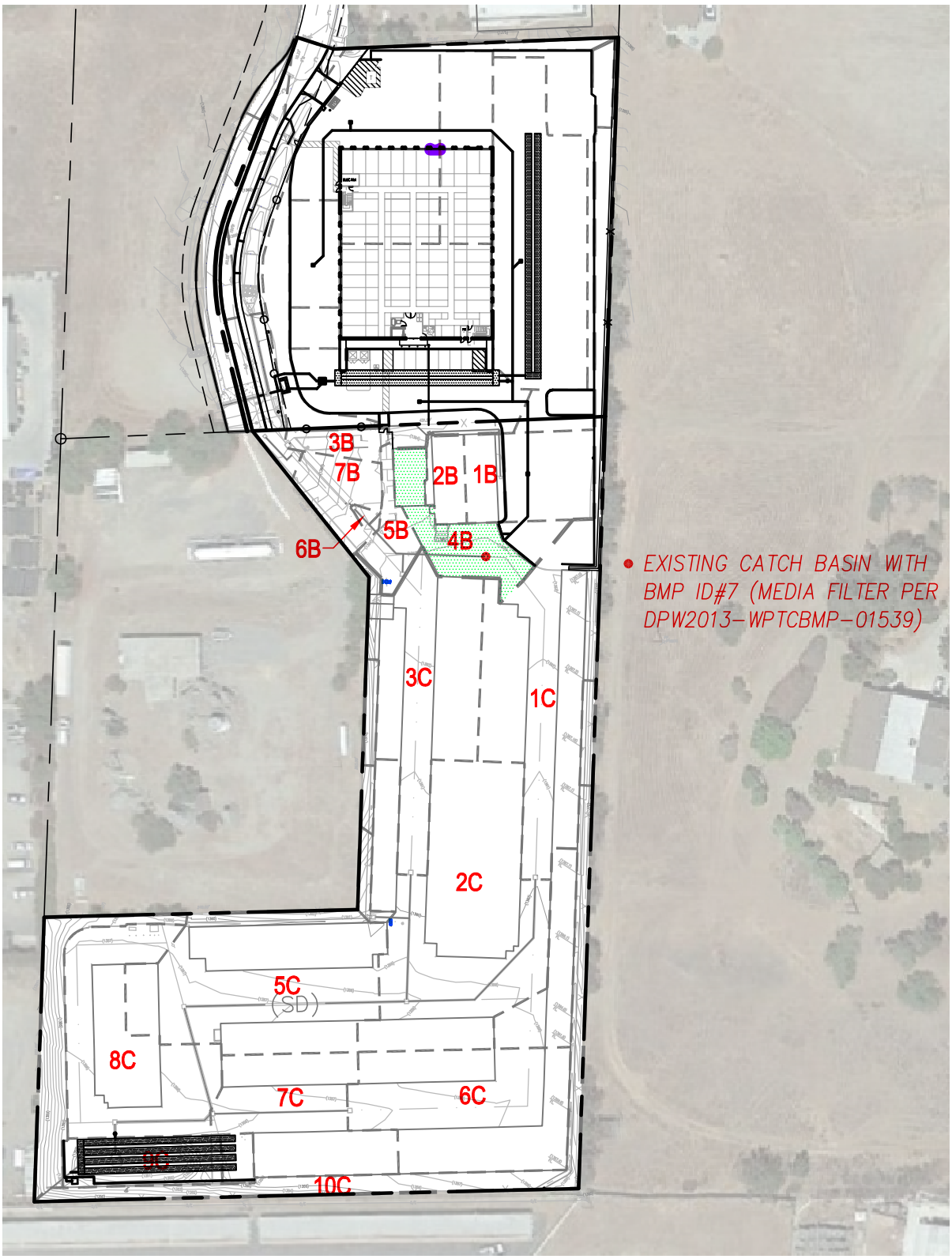
714-685-6860

VICINITY MAP

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



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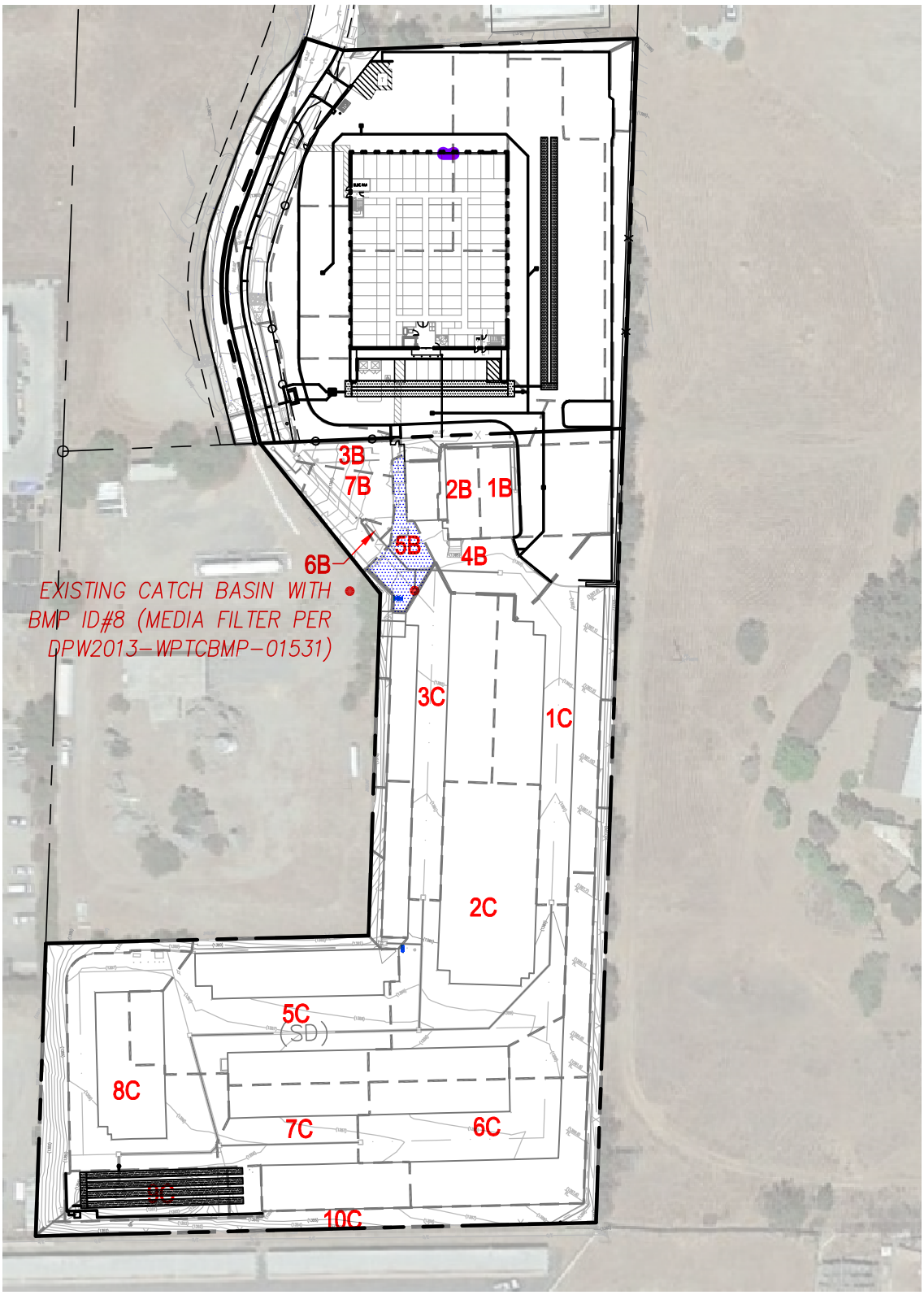
BMP ID#7

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



SCALE: 1"=120'

SHEET 3 OF 12

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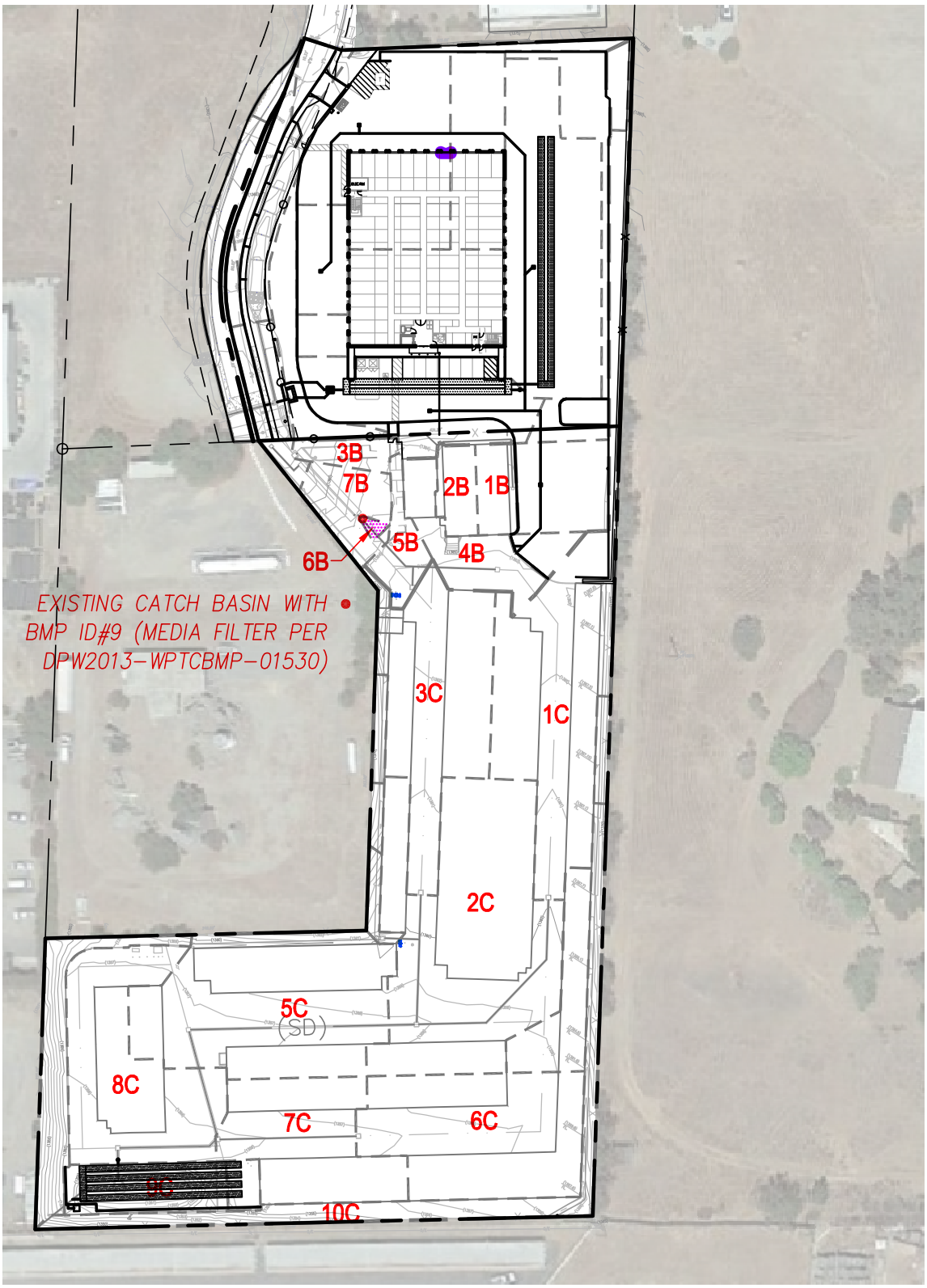
BMP ID#8

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



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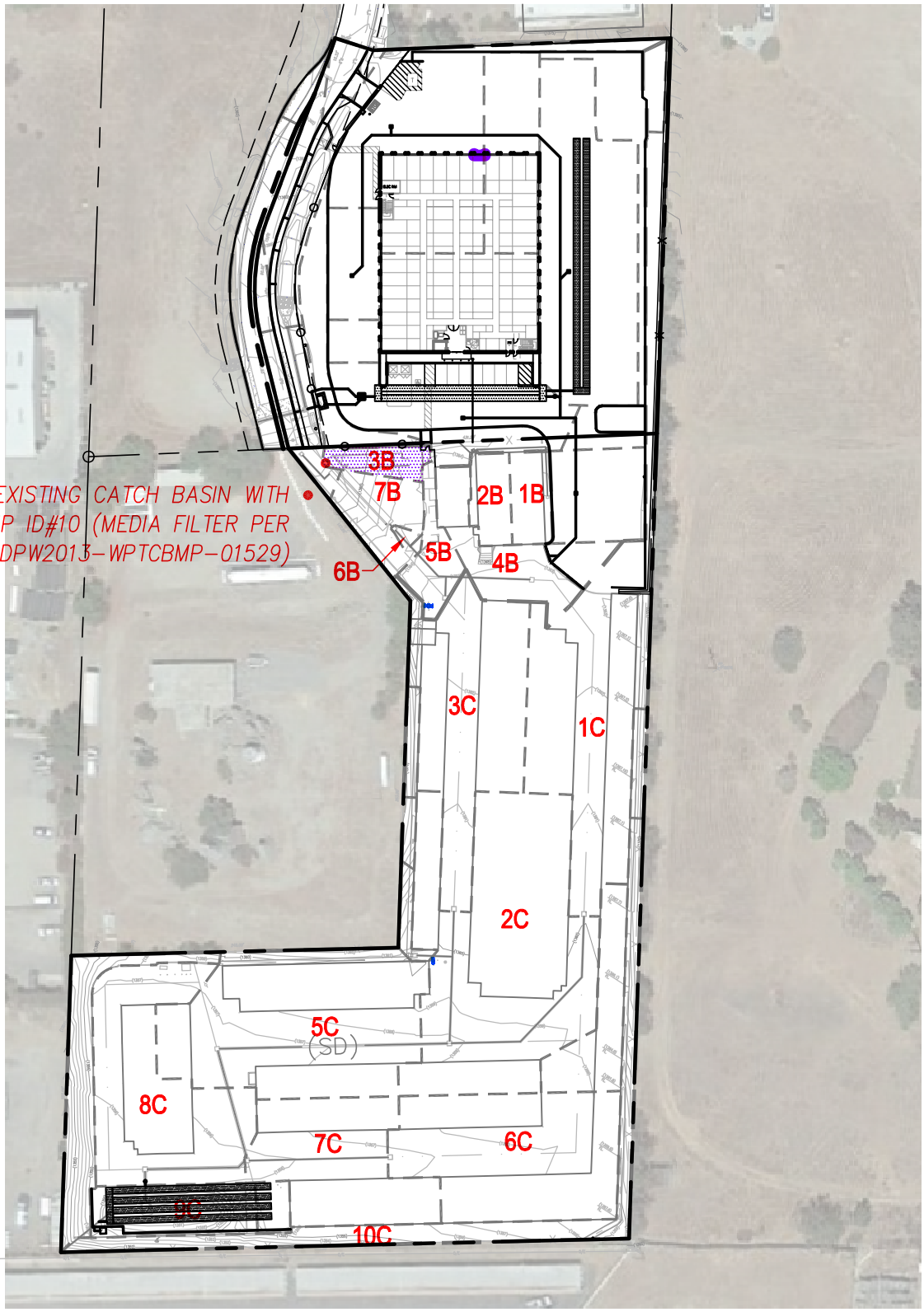
BMP ID#9

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



SCALE: 1"=120'

SHEET 5 OF 12

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BMP ID#10

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

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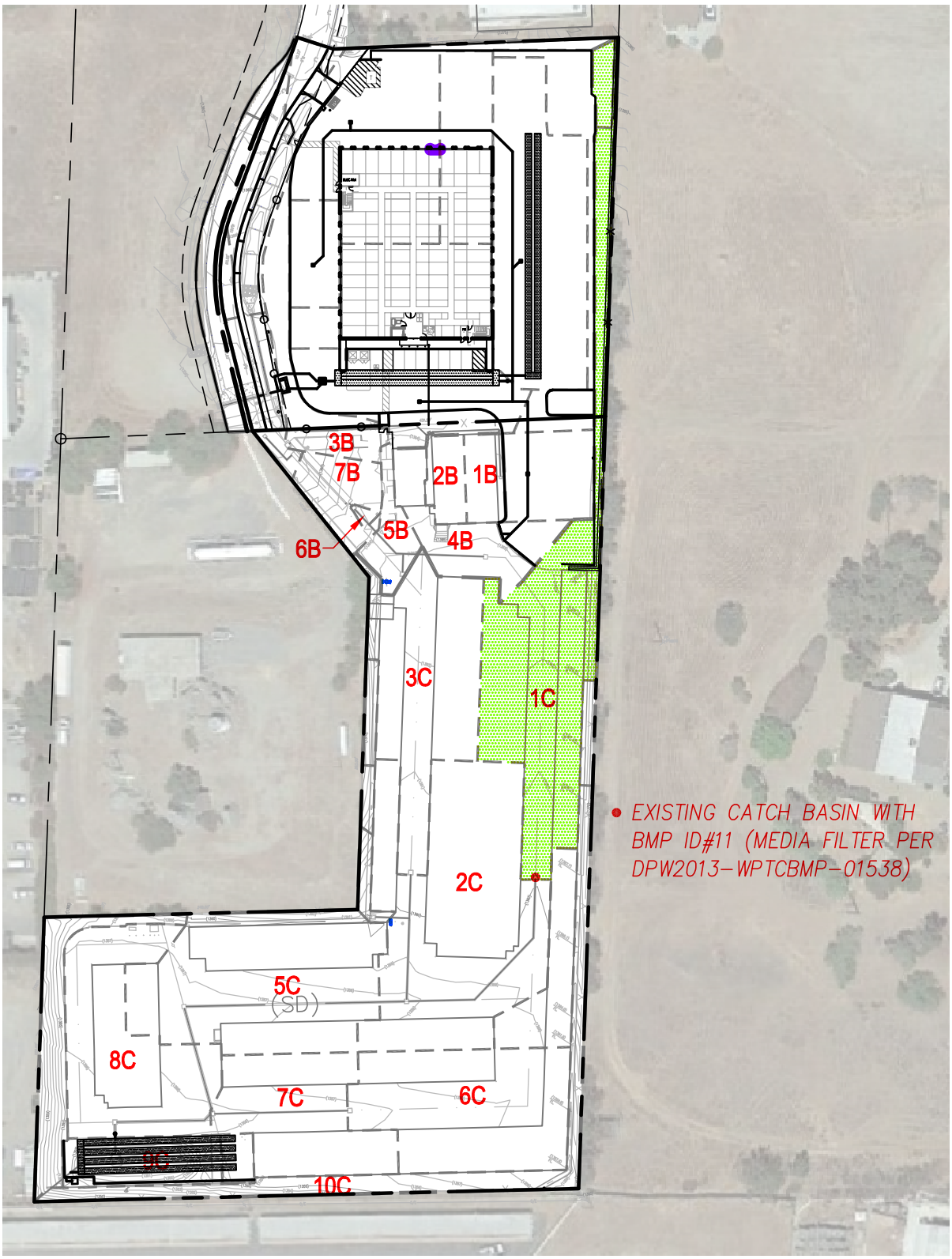

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BMP ID#11

28435 LIZARD ROCKS ROAD
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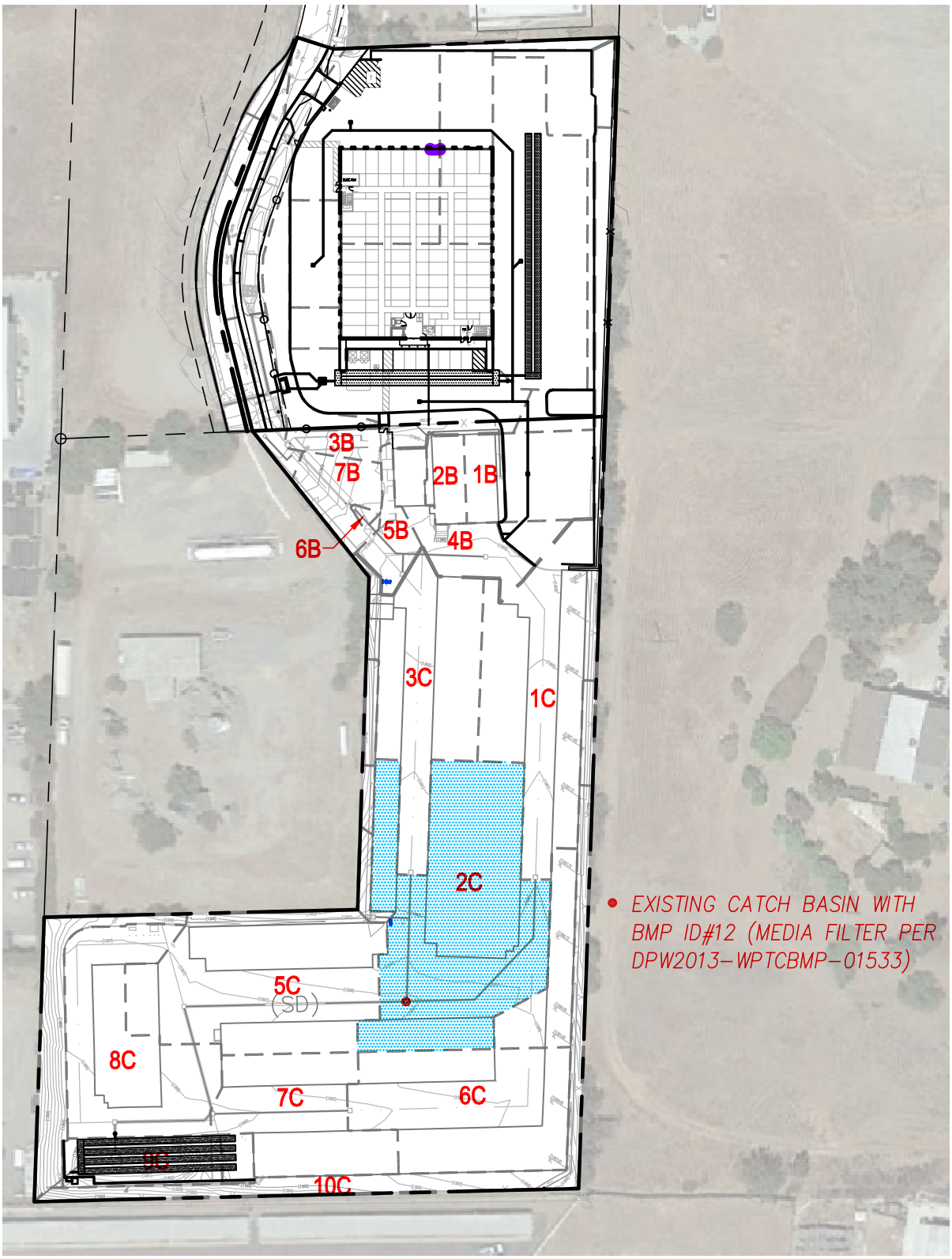
EXHIBIT "A"



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BMP ID#12

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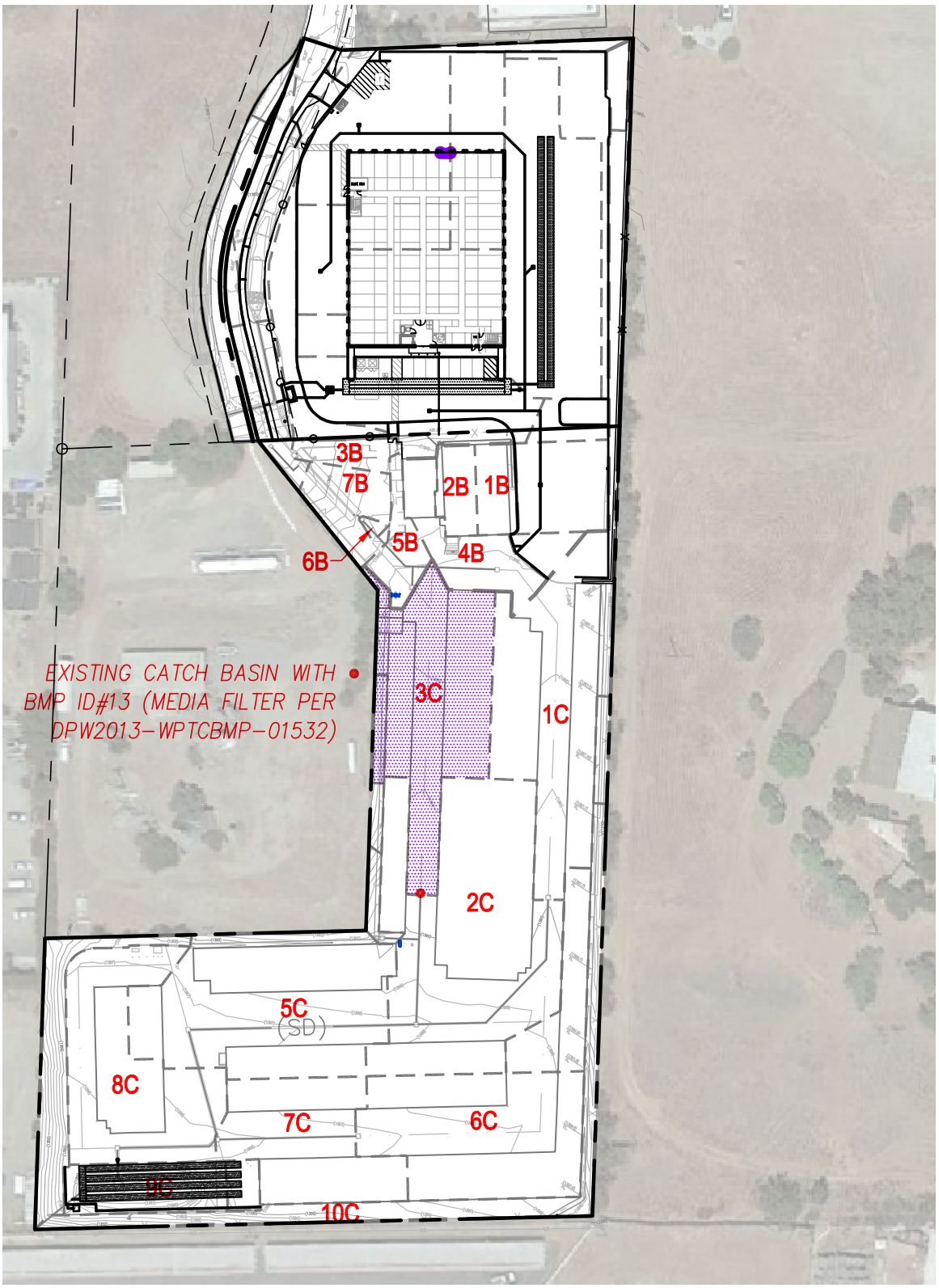

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BMP ID#13

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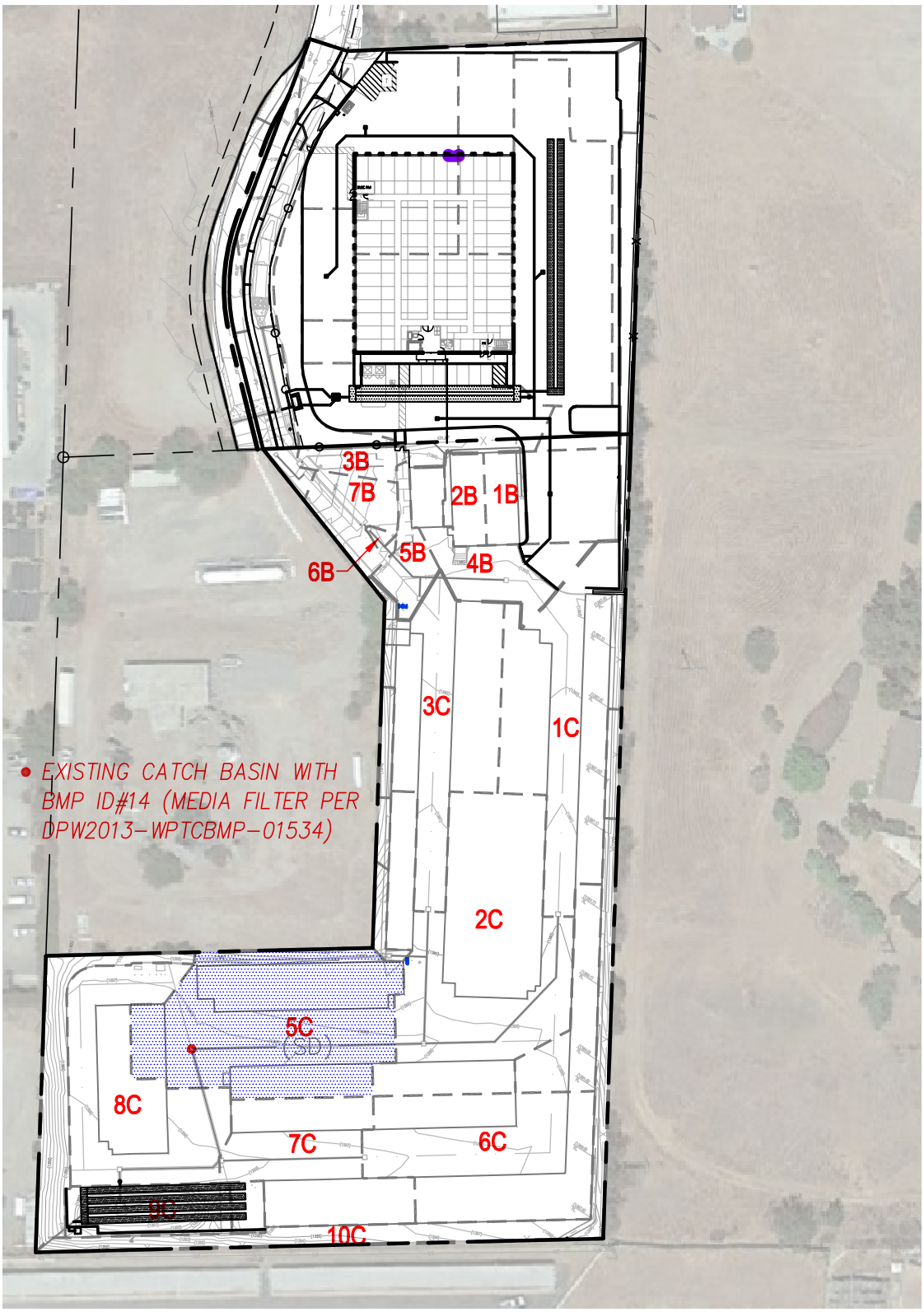
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



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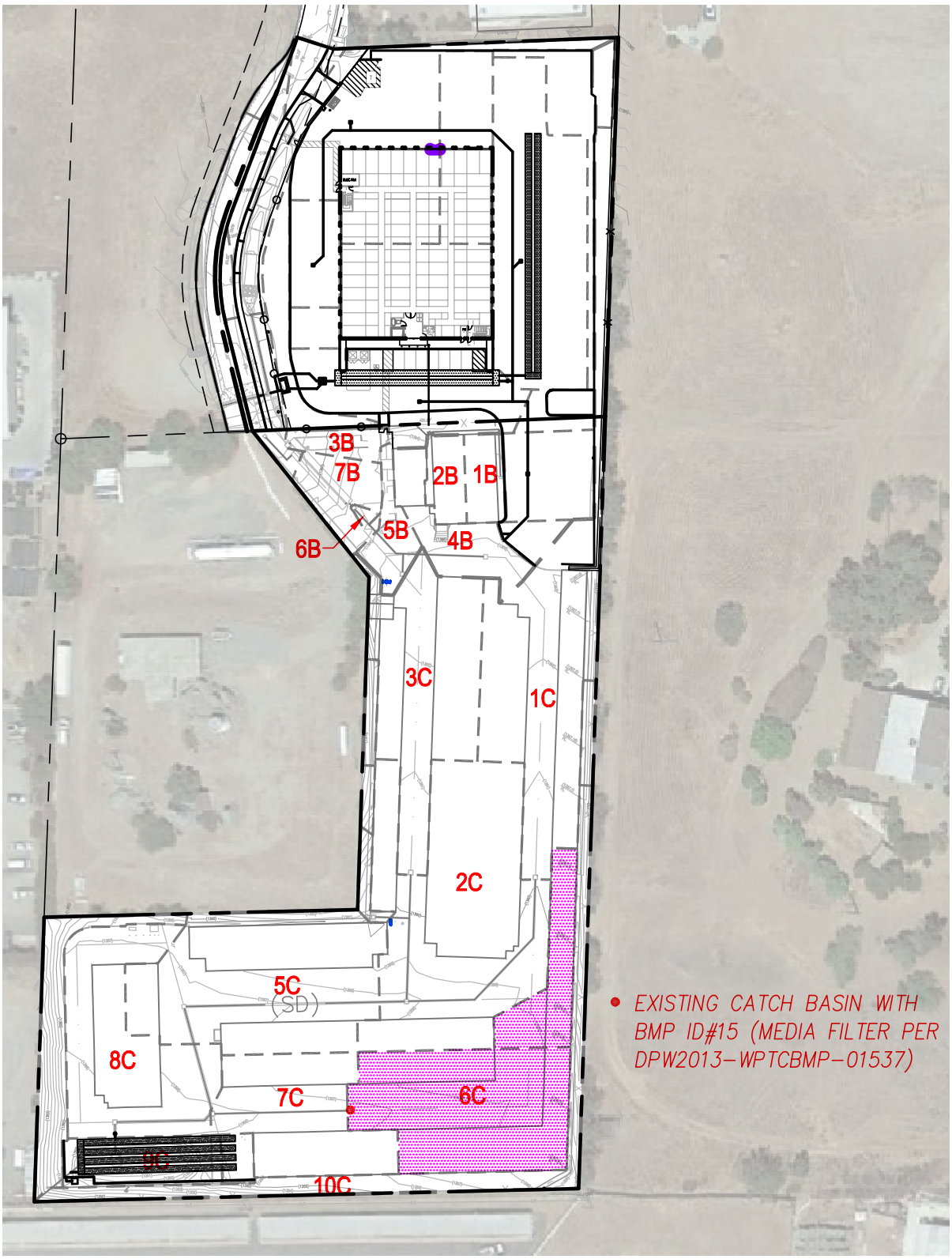
BMP ID#14

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



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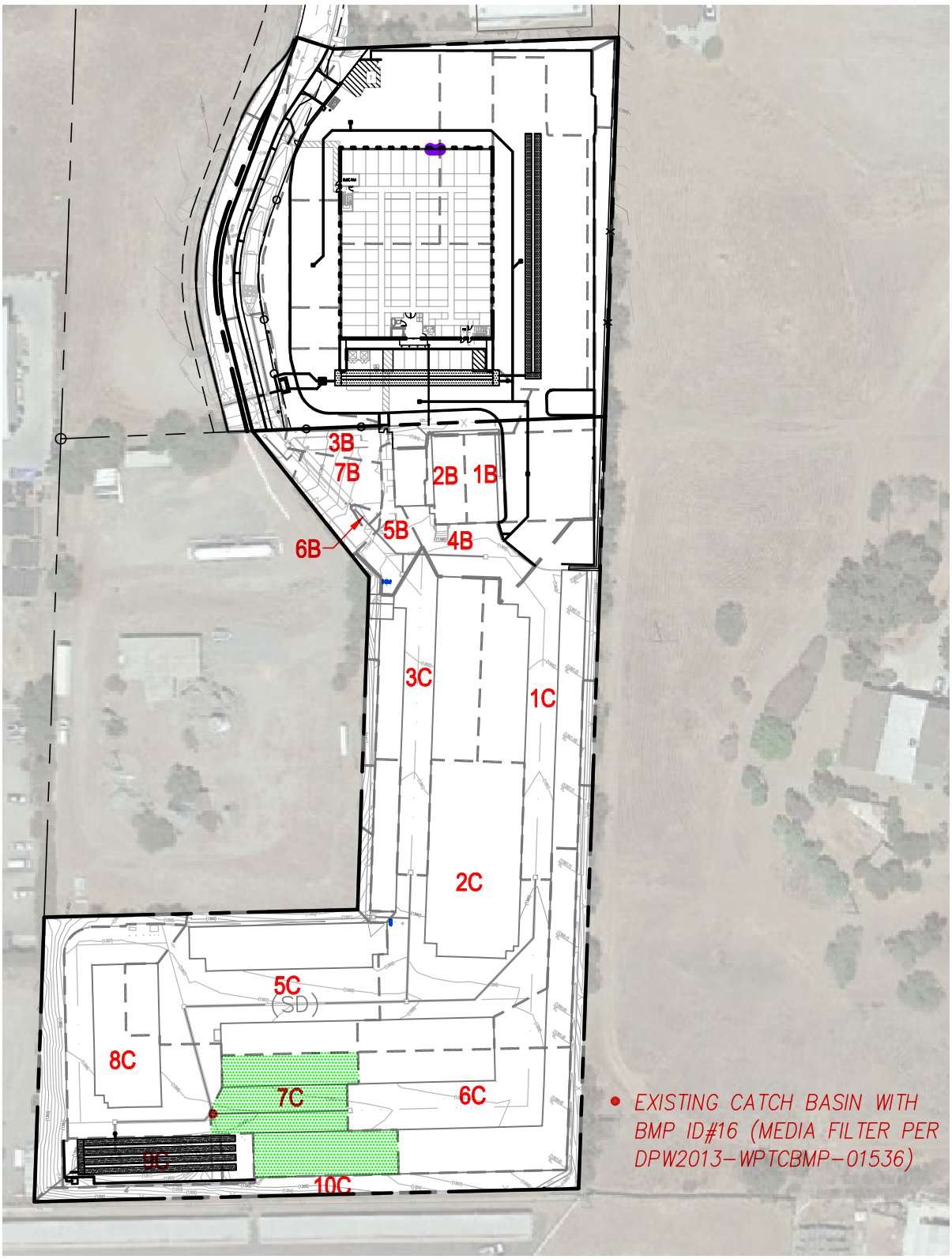
BMP ID#15

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



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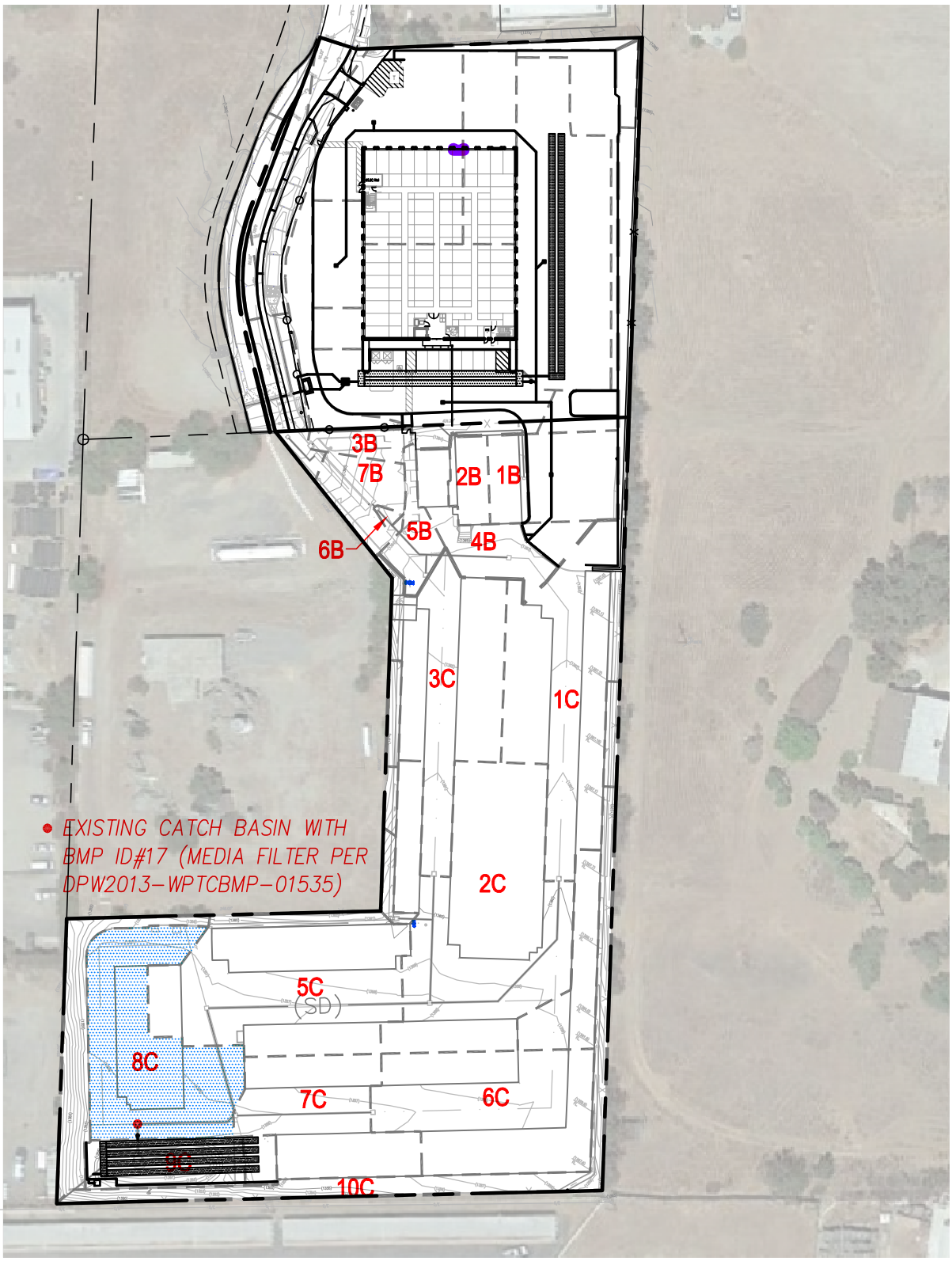
BMP ID#16

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

EXHIBIT "A"



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BMP ID#17

28435 LIZARD ROCKS ROAD
VALLEY CENTER, CALIFORNIA

Exhibit B: BMP Maintenance Plan

BMP Name	Maintenance Indicator	Maintenance Procedure	Access	Features to Facilitate Inspection	Maintenance Thresholds	Recommended Equipment	Special Training or Certification Required for Inspection and Maintenance
Structural BMPs							
FT-2: Media Filters (Existing) BioClean Grate Inlet Filter Media	**Inspection Steps** Grate Inlet Media Filter can be inspected through visual observation. All necessary pre-inspection steps must be carried out before inspection occurs. • Prepare inspection form and record any observations from the following: • Observe the filter with the grate removed • Look for any out-of-the-ordinary obstructions on the grate or in the filter and its bypass. • Through observation and/or digital photographs, estimate the amount of trash, foliage and sediment accumulated inside the filter basket. • Observe the condition and color of the hydrocarbon boom and filtration media. • Finalize inspection report for analysis by maintenance manager to determine if maintenance is required. **Maintenance Indicator** • Missing or damaged internal components • Obstructions in the filter basket and its bypass • Excessive accumulation of trash, foliage and sediment in the filter basket. Maintenance is required when the basket is greater than half-full. • Filtration media is clogged.	**Maintenance Procedure** It is recommended that maintenance occurs at least two days after the most recent rain event to allow debris and sediments to dry out. Cleaning of the Grate Inlet Filter can be performed utilizing a vacuum truck. • Implement traffic control and safety measures if necessary • Remove grate • Using an extension on a vacuum truck, position the hose over the opened catch basin. Insert the vacuum hose down into the filter basket and suck out trash, foliage and sediment. A pressure washer is recommended and will assist in spraying of any debris stuck on the side or bottom of the filter basket. Power wash off the filter basket sidse and bottom. • Remove hydrocarbon boom that is attached to the inside of the filter basket. If replacement is required, install and fasten on a new hydrocarbon boom, ordered directly from the manufacturer. • Access the media chamber by pulling up on the handle of the removal top screen. Determine based on media color assessment and condition. If replacement is required, vacuum out of the filter media using the vacuum truck. Once vacuumed out, use the pressure washer to spray clean the bottom screen and sides. The chamber is now ready to accept new filter media directly ordered from the manufacturer. • The last step is to replace the grate inlet and remove all traffic control.	Grate Inlet	Grate Inlet		• Small or large vaccum truck • Pressure washer • BioClean Environmental Maintenance Form • Manhole hook or appropriate tools to remove the grate. • Appropriate safety signage and procedures. • Protective clothing and eye protection. • Appropriate Safety and Certification if entering a confined space.	OSHA Confined Spaces Certificate to enter confined spaces

Stormwater Maintenance Agreement
(Category 2 BMPs)

EXHIBIT "A": LEGAL DESCRIPTION OF PROPERTY

LEGAL DESCRIPTION

PARCEL 1:

ALL THAT PORTION OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 11 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER; THENCE ALONG THE SOUTH LINE THEREOF SOUTH 88°35'07" WEST, 355.11 FEET; THENCE NORTH 01°57'16" EAST PARALLEL WITH THE EAST LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, A DISTANCE OF 610.63 FEET TO THE TRUE POINT OF BEGINNING; THENCE LEAVING SAID PARALLEL LINE SOUTH 87°37'40" WEST, 279.59 FEET TO A POINT HEREIN DESCRIBED AS POINT "A"; THENCE NORTH 13°59'40" WEST, 87.82 FEET TO THE BEGINNING OF A TANGENT 150.00 FOOT RADIUS CURVE CONCAVE EASTERLY; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 34°41'20" A DISTANCE OF 90.82 FEET TO THE POINT OF TANGENCY; THENCE NORTH 20°41'40" EAST, 135.66 FEET TO THE BEGINNING OF A TANGENT 200.00 FOOT RADIUS CURVE CONCAVE WESTERLY; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 02°58'10" A DISTANCE OF 10.37 FEET; THENCE RADIAL TO SAID CURVE SOUTH 72°16'30" EAST, 30.00 FEET; THENCE NORTH 87°37'40" EAST, 225.86 FEET, MORE OR LESS, TO THE ABOVE MENTIONED LINE DRAWN PARALLEL WITH THE EAST LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER; THENCE ALONG SAID PARALLEL LINE SOUTH 01°57'16" WEST, 300.00 FEET TO THE TRUE POINT OF BEGINNING.

PARCEL 2:

AN EASEMENT AND RIGHT OF WAY FOR ROAD AND PUBLIC UTILITY PURPOSES TOGETHER WITH THE RIGHT TO CONVEY THE SAME TO ANY PERSONS OVER AND ACROSS A STRIP OF LAND 60.00 FEET WIDE, THE CENTER LINE OF WHICH IS DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT HEREIN DESIGNATED IN PARCEL NO. 1 AS POINT "A"; THENCE NORTH 13°59'40" WEST, 87.82 FEET TO THE BEGINNING OF A TANGENT 150.00 FOOT RADIUS CURVE, CONCAVE EASTERLY; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 34°41'20" A DISTANCE OF 90.82 FEET TO THE POINT OF TANGENCY; THENCE NORTH 20°41'40" EAST, 135.66 FEET TO THE BEGINNING OF A TANGENT 200.00 FOOT RADIUS CURVE, CONCAVE WESTERLY, THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 26°09'20" A DISTANCE OF 91.30 FEET TO THE POINT OF TANGENCY, THENCE NORTH 05°27'40" WEST, 185.73 FEET, MORE OR LESS, TO AN INTERSECTION WITH THE SOUTHERLY BOUNDARY OF THAT CERTAIN 50.00 FOOT COUNTY ROAD KNOW AS RELOCATION OF ROUTE 19, DIVISION 1, COUNTY HIGHWAY COMMISSION, ALSO KNOWN AS VALLEY CENTER ROAD AND THE END OF THIS EASEMENT.

EXCEPTION THEREFROM THAT PORTION OF SAID 60.00 FOOT OF LAND LYING WITHIN THE BOUNDARIES OF PARCEL 1 HEREINABOVE DESCRIBED.

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714-685-6860

EXHIBIT "A"

28435 LIZARD ROCKS ROAD

VALLEY CENTER, CALIFORNIA

Exhibit B: BMP Maintenance Plan

BMP Name	Maintenance Indicator	Maintenance Procedure	Access	Features to Facilitate Inspection	Maintenance Thresholds	Recommended Equipment	Special Training or Certification Required for Inspection and Maintenance
Structural BMPs							
BF-3: Proprietary Biofiltration BioClean Modular Wetlands System (MWS): Model MWS-L-8-8-V and Model MWS-L-4-4-C	Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and/or landscape architect. Different types of vegetation requires different amounts of irrigation. **Inspect Structural Integrity:** 1. Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure? 2. Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure? 3. Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)? 4. Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly? **Inspect Working Condition:** 1. Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit? 2. Is there standing water in inappropriate areas after a dry period? 3. Is the filter insert at capacity and/or is there an accumulation of debris/trash on the shelf system? 4. Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? Note depth of accumulation in the pre-treatment chamber. 5. Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber? 6. Any signs of improper functioning in the discharge chamber? **Other Inspection Items:** 1. Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)? 2. Is it evident that the plants are alive and healthy (if applicable)?	**Screening Device (for MWS-L-4-4-C only):** 1. Remove manhole cover to gain access to the screening device in the Pre-treatment Chamber. 2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. 3. Screening device can easily be removed from the Pre-treatment Chamber to gain access to separation chamber and media filters below. Replace manhole cover when completed. **Separation Chamber:** 1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber. 2. With a pressure washer, spray down pollutants accumulated on walls and cartridge filters. 3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device and manhole cover when completed. **Cartridge Filters:** 1. Perform maintenance procedures of screening device and separation chamber before maintaining cartridge filters. 2. Enter separation chamber. 3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid. 4. Remove each of 4 to 8 media cages holding the media in place. 5. Spray down the cartridge filter to remove any accumulated pollutants. 6. Vacuum out old media and accumulated pollutants. 7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. 8. Replace the lid and tighten down bolts. Replace screening device and manhole cover when completed.	MWS-L-8-8-V is located behind the sidewalk along Lizard Rocks Road and can be accessed from Lizard Rocks Road. MWS-L-4-4-C is located adjacent to drive aisle and can be accessed from the drive aisle.	Manhole	Remove trash from Screening Device - average maintenance interval is 6 to 12 months Remove sediment from Separation Chamber - average maintenance interval is 12 to 24 months Replace Cartridge Filter Media - average maintenance interval is 12 to 24 months Replace Drain Down Filter Media - average maintenance interval is 12 to 24 months Trim Vegetation - average maintenance interval is 6 to 12 months	Vacuum truck, pressure washer, and container or trash bag to collect trash and debris	OSHA Confined Spaces Certificate to enter confined spaces

BMP Name	Maintenance Indicator	Maintenance Procedure	Access	Features to Facilitate Inspection	Maintenance Thresholds	Recommended Equipment	Special Training or Certification Required for Inspection and Maintenance
	3. Is there a septic or foul odor coming from inside the system? Fill out Inspection Form and Maintenance Report provided by the manufacturer and keep for a minimum of five years from the date of maintenance. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.	**Drain Down Filter:** 1. Remove hatch or manhole cover over discharge chamber and enter chamber. 2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place. 3. Exit chamber and replace hatch or manhole cover.					
Hydromodification Management (Detention Vault) Contech CMP Underground Detention System	Systems should be cleaned when inspection reveals that accumulated sediment or trash is clogging the discharge orifice. **Regular Inspection:** The manufacturer recommends ongoing quarterly inspections of the accumulated sediment. Sediment deposition and transport may vary from year to year and quarterly inspections will help ensure that system is cleaned out at the appropriate time. Inspections should be performed more often in the winter months in climates where sanding operations may lead to rapid accumulations, or in equipment washdown areas. Keep a record of each inspection. System should be cleaned when inspection reveals that accumulated sediment or trash is clogging the discharge orifice. **Inspection Frequency:** Inspect and maintain at a minimum of 3 times annually. Inspect within 72 hours of a storm event. Quarterly inspections of accumulated sediment. Inspection should be performed more often in the winter months.	**Regular Sweeping and Removal of Debris:** Vehicle parking lot should be swept on a regular basis. Sediment and debris (litter, leaves, papers and cans, etc.) within the area, especially around the drainage inlet, will be collected and removed. The frequency of sweeping will be based on the amount of sediment and debris generated.	Both systems are located within the drive aisle and can be accessed from drive aisles.	Access or Inspection manhole	Maintenance is required when inspection reveals that accumulated sediment or trash is clogging the discharge orifice	Broom and vacuum truck	OSHA Confined Spaces Certificate to enter confined spaces
Hydromodification Management Detention Vault (Existing) NDS Hydrologic Solutions Storm Chamber Underground Detention System	**Inspection Schedule** Inspect through the risers quarterly. It is recommended that a log book be maintained showing the depth of water in the Storm Chamber at each observation in order to determine the rate at which the Storm Chamber system dewaters after runoff producing storm events.	**Grate Inlet Catch Basin Structure** The use of grate inlet structures will keep the vast majority of debris out of the StormChamber system and will allow for additional capture of sediment that can be easily removed with a vacuum truck or other device before it gets into the StormChamber system.	The Underground Detention System is within the drive aisle onsite located near the south end of Lizard Rocks Road and can be accessed by the adjacent Grate Inlet Catch Basin	Grate Inlet Catch Basin Structure	Sediment should be removed when deposits approach 6 inches of the invert heights of connecting pipes between StormChamber rows, or in sumped inlet structures	Vacuum truck	OSHA Confined Spaces Certificate to enter confined spaces

BMP Name	Maintenance Indicator	Maintenance Procedure	Access	Features to Facilitate Inspection	Maintenance Thresholds	Recommended Equipment	Special Training or Certification Required for Inspection and Maintenance
	Once the performance characteristics of the StormChamber have been verified, the monitoring schedule can be reduced to an annual basis, unless the performance data suggests that a more frequent schedule is required. Sediment should be removed when deposits approach within six inches of the invert heights of connecting pipes between StormChamber rows, or in sumped inlet structures.		Inlet Catch Basin Structure		Structures		

EXHIBIT "C": PROJECT SITE VICINITY MAP

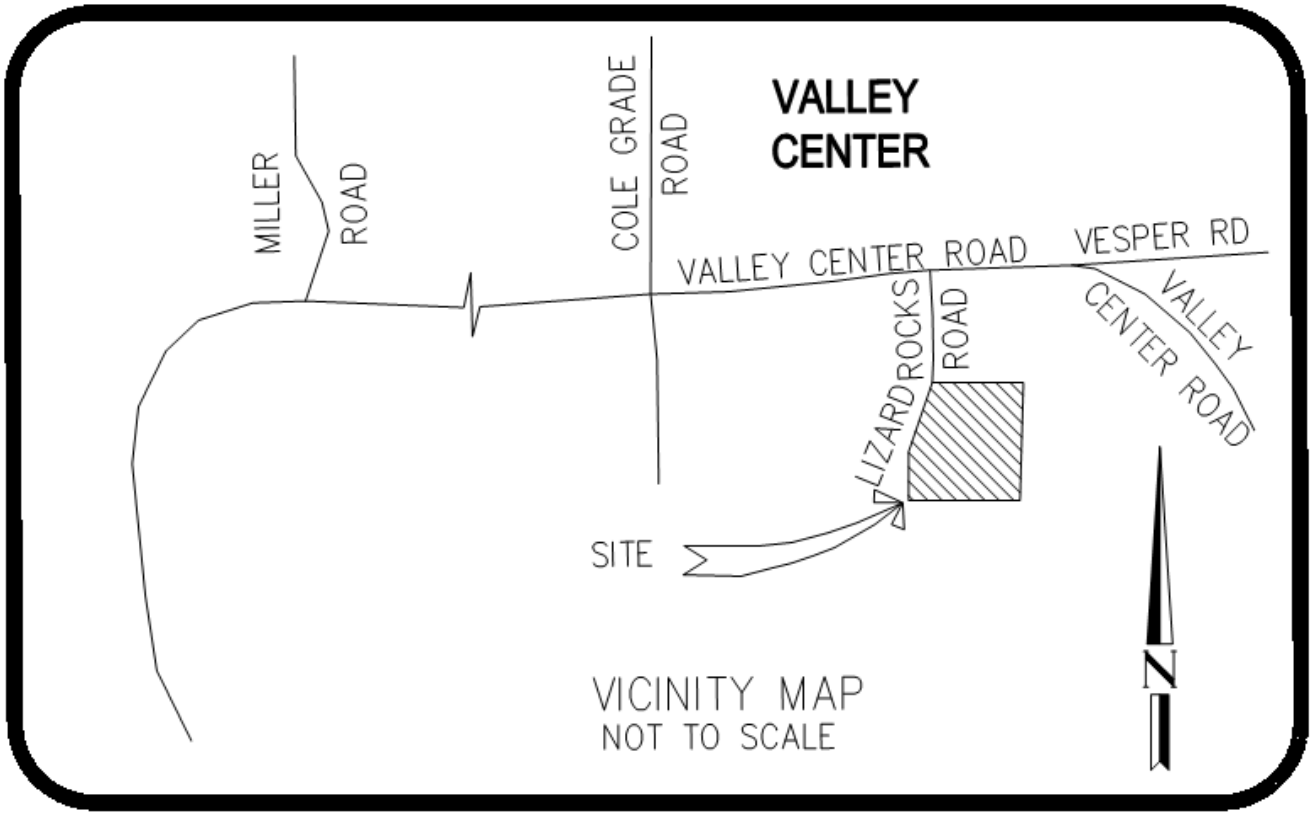

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EXHIBIT "C"

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